RRB NTPC (UG) CBT-I Official Paper (Held On: 12 Aug, 2025 Shift 3) (Previous Year Paper)

RRB Group D • 2025 • 100 questions • 90 minutes • Answer key and solutions

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GENERAL AWARENESS

Q1. As of July 2025, how many Indian States have a bicameral legislature (i.e. both, a Legislative Assembly and a Legislative Council)?

(a) Eight
(b) Six
(c) Seven
(d) Five

Q2. In Indian State governments, to whom is the State Council of Ministers collectively responsible?

(a) The Governor of the State
(b) Council of States
(c) State Legislative Assembly
(d) Chief Justice of the concerned State

Q3. Which initiative is intended to encourage domestic manufacturing and attract foreign investment?

(a) Digital India
(b) Make in India
(c) Startup India
(d) Skill India

Q4. The Red Fort in Delhi was constructed during the reign of which of the following Mughal emperors?

(a) Babur
(b) Shah Jahan
(c) Aurangzeb
(d) Akbar

Q5. In March 2025, _____ became the 28th legislature to join the National e-Vidhan Application platform.

(a) Odisha
(b) Delhi
(c) Sikkim
(d) Jharkhand

Q6. Which revolutionary along with Batukeshwar Dutt threw bombs in the Central Assembly in 1929?

(a) Bhagat Singh
(b) Chandrashekhar Azad
(c) Ashfaqulla Khan
(d) Rajguru

Q7. Who made history as the first woman, the youngest person, and the first African to be elected President of the International Olympic Committee (IOC) in 2025?

(a) Kirsty Coventry
(b) Tegla Loroupe
(c) Fatma Samoura
(d) Nawal El Moutawakel

Q8. Which Gupta emperor was known as the 'Napoleon of India' due to his military conquests and strategic warfare?

(a) Chandragupta I
(b) Samudragupta
(c) Kumaragupta
(d) Skandagupta

Q9. Which country led the 2024 Global Gender Gap Report by closing over 90% of its gender gap?

(a) Finland
(b) Norway
(c) Iceland
(d) Sweden

Q10. Although a colloid appears homogeneous, it is actually a _____.

(a) suspension
(b) true solution
(c) homogeneous mixture
(d) heterogeneous mixture

Q11. What happens when you delete a file or folder using the Delete key?

(a) The file is copied to another folder.
(b) The file is renamed automatically.
(c) The file is sent to the Recycle Bin.
(d) The file is permanently deleted without warning.

Q12. Which of the following pairs of neighbouring countries are landlocked and share only land borders with India?

(a) Bangladesh and Myanmar
(b) Nepal and Bhutan
(c) Pakistan and China
(d) Sri Lanka and Maldives

Q13. Which of the following represents the longitudinal extent of India?

(a) 68°7'E and 97°25'E
(b) 56°7'E and 87°25'E
(c) 58°7'E and 94°25'E
(d) 54°7'E and 77°25'E

Q14. Who among the following was appointed as the new Chairman of the Union Public Service Commission (UPSC) in May 2025?

(a) Shri Rajesh Verma
(b) Dr. Anil Kumar
(c) Dr. Ajay Kumar
(d) Ms. Priya Sharma

Q15. Who among the following wrote the novel Godaan, which is considered a classic of modern Hindi literature?

(a) Bankim Chandra Chatterjee
(b) Munshi Premchand
(c) RK Narayan
(d) Rabindranath Tagore

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Q16. Which Ministry co-organised the 9th edition of the Global Technology Summit (GTS) with Carnegie India in April 2025 in New Delhi?

(a) Ministry of External Affairs
(b) Ministry of Information and Broadcasting
(c) Ministry of Communications
(d) Ministry of Electronics and Information Technology

Q17. Which tool in Windows helps one manage and organize files and folders?

(a) Paint
(b) Recycle Bin
(c) File Explorer
(d) Task Manager

Q18. Which of the following indigenously developed underwater naval mines was successfully tested by DRDO and the Indian Navy in May 2025?

(a) Multi-Influence Ground Mine
(b) Barak Mine
(c) Sea Dragon
(d) Varunastra

Q19. In April 2025, which startup, selected by the Department of Science and Technology (DST) under the National Quantum Mission (NQM), has launched the world's first platform — QShield — that enables seamless cryptography management?

(a) AMu Labs
(b) SST Labs
(c) CCS Labs
(d) QNu Labs

Q20. Which postulate of Dalton's atomic theory reflects the Law of Conservation of Mass?

(a) Atoms cannot be created or destroyed in a chemical reaction.
(b) Atoms of different elements have different masses and properties.
(c) Atoms combine in simple whole-number ratios to form compounds.
(d) All matter is made up of indivisible particles called atoms.

Q21. What was the main aim of TRYSEM (Training for Rural Youth for Self-Employment)?

(a) Offering free education in rural areas
(b) Upgrading skills of rural youth to tackle unemployment
(c) Providing loans to farmers
(d) Building infrastructure in villages

Q22. Which of these was NOT a cause of popular resentment against British rule before 1857?

(a) Low wages
(b) High taxes
(c) Religious tolerance
(d) Racial discrimination

Q23. Padma Vibhushan awardee of 2025, Dr. Lakshminarayana Subramaniam is a famous musician of which instrument?

(a) Shehnai
(b) Violin
(c) Sitar
(d) Flute

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Q24. The title Devaputra, used by the Kushana rulers, implies which of the following?

(a) Hereditary monarchy
(b) Divine origin or claim to divinity
(c) Heir to Mauryan traditions
(d) Protector of Dharma

Q25. Who is the director of the film 'Laapataa Ladies', which won Best Picture at the 2025 IIFA Awards?

(a) Kiran Rao
(b) Yash Chopra
(c) Farhan Akhtar
(d) Karan Johar

Q26. Which of the following parts of the plant is primarily responsible for sexual reproduction in angiosperms?

(a) Stem
(b) Leaf
(c) Flower
(d) Root

Q27. The Hazira–Vijaipur–Jagdishpur (HVJ) pipeline is mainly used to transport:

(a) natural gas
(b) petrol
(c) crude oil
(d) kerosene

Q28. Which Indian state shares its border with China, Nepal and Bhutan?

(a) Himachal Pradesh
(b) Uttarakhand
(c) Arunachal Pradesh
(d) Sikkim

Q29. What was the main aim of IRDP (Integrated Rural Development Programme) ?

(a) To provide free food to rural families
(b) To promote urban employment
(c) To assist poor rural families in acquiring assets or skills for self-employment
(d) To build schools in villages

Q30. Which of these is a part of solid waste management infrastructure?

(a) Drainage tanks
(b) Garbage collection and disposal
(c) Sewage pipelines
(d) Electricity transmission lines

Q31. The Wahabi Movement was started by Syed Ahmad, of _____.

(a) Hyderabad
(b) Amritsar
(c) Jhansi
(d) Rae Bareli

Q32. Which Amendment extended the reservation of seats for SCs and STs in the legislatures for another 10 years till 2030?

(a) 105th Amendment
(b) 101st Amendment
(c) 104th Amendment
(d) 103rd Amendment

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Q33. The new Indian Ports Bill 2025 seeks to repeal which Indian Act?

(a) The Indian Bills of Lading Act, 1856
(b) The Major Port Authorities Act, 2021
(c) The Calcutta Port (Pilotage) Act, 1948
(d) The Indian Ports Act, 1908

Q34. The Eleventh Schedule of the Indian Constitution relates to which of the following?

(a) Functions of municipalities
(b) State list subjects
(c) Powers and responsibilities of Panchayats
(d) Anti-defection law

Q35. Privatisation under the 1991 reforms primarily involved:

(a) increasing agricultural subsidies
(b) reducing bank interest rates
(c) nationalising private companies
(d) selling government shares in public sector enterprises

Q36. The 'Montreal Protocol' was signed to control the emission of _____.

(a) chlorofluorocarbons
(b) carbon dioxide
(c) methane
(d) sulphur dioxide

Q37. Which of the following organisations collaborated with the Indian Navy for the VLSRSAM launch in March 2025?

(a) Hindustan Aeronautics Limited
(b) Bharat Electronics Limited
(c) Bhabha Atomic Research Centre
(d) Defence Research and Development Organisation

Q38. What key principle did the Supreme Court emphasise in the 2024 Property Owners Association v State of Maharashtra case?

(a) Only scarce or vital resources justify state takeover
(b) Public trust doctrine applies to all private assets.
(c) State can acquire all private properties at will.
(d) Government power overrides individual property rights.

Q39. Which of the following schemes aims to empower adolescent girls?

(a) NRHM
(b) Kishori Shakti Yojana
(c) National Nutrition Mission
(d) Janani Suraksha Yojana

Q40. Overseas Citizen of India (OCI) holders are:

(a) Persons entitled to hold constitutional posts
(b) Indian citizens with voting rights
(c) Dual citizens of India and another country
(d) Foreign nationals with special privileges

MATHEMATICS

Q41. Simplify $4((6/4)x^2-25x+12)-6(x^2+5x-13)$

(a) −130x + 126
(b) 130x + 126
(c) −130x − 126

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(d) 130x − 126

Q42. Which of the following numbers divides 386937355?

(a) 3
(b) 15
(c) 5
(d) 14

Q43. M and N start a business. M invests Rs. 79,000 more than N for 7 months and N invests for 6 months. M's share is Rs. 745 more than that of N, out of a total profit of Rs. 6,705. Find the capital contributed by M.

(a) Rs. 12,00,000
(b) Rs. 11,80,000
(c) Rs. 12,05,000
(d) Rs. 11,85,000

Q44. Find the value of [682 ÷ {20 + 2 × (5 − 4)}].

(a) 31
(b) 26
(c) 28
(d) 34

Q45. A book seller gives a 4% discount on the marked price and gives one book free during vacation for buying every pack of 15 books of the same cost, and thus gains 35%. By what percentage is the marked price higher than the cost price?

(a) 35%
(b) 25%
(c) 40%
(d) 50%

Q46. 83 mirrors were purchased for Rs. 83, and 22 mirrors broke in transit. The trader sold the remaining mirrors at Rs. 3.60 each. Find his profit.

(a) Rs. 144.50
(b) Rs. 136.60
(c) Rs. 132.40
(d) Rs. 127.70

Q47. The population of a district is 362000, out of which 181000 are males. 47% of the population is literate. If 35% males are literate, then what percentage of females are literate?

(a) 61%
(b) 58%
(c) 62%
(d) 59%

Q48. The average runs scored by a batsman in 23 matches is 40. In the next 10 matches, the batsman scored an average of 16 runs. Find his average runs scored (rounded off to two decimals) in all the 33 matches.

(a) 33.73
(b) 34.73
(c) 31.73
(d) 32.73

Q49. The average price of three items of furniture is Rs. 5,325. If their prices are in the ratio 3 : 5 : 7, the price of the cheapest item (in Rs.) is:

(a) 7,455
(b) 1,065
(c) 3,195
(d) 5,325

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Q50. If sec θ + tan θ = s, then find the value of $(s^2-1)/(s^2+1)$

(a) cot θ
(b) sec θ
(c) sin θ
(d) cosec θ

Q51. ABCD is a quadrilateral in which AB || DC, and E and F are the mid points of the diagonals AC and BD, respectively. If AB = 12 cm, BC = 40 cm, DC = 30 cm, and AD = 45 cm, then what is the length (in cm) of EF?

(a) 9
(b) 8
(c) 5
(d) 13

Q52. The sides of a triangle are 28 cm, 45 cm, and 53 cm. What is its area? (in cm^2)

(a) 665
(b) 630
(c) 664
(d) 658

Q53. Rishi travels 198 km at 66 km/hr, the next 584 km at 73 km/hr and the next 656 km at 82 km/hr. What is his average speed (in km/hr) for the whole journey? (Round off your answer to two decimal places)

(a) 82.07
(b) 75.68
(c) 82.71
(d) 79.25

Q54. The LCM of the numbers 6.3 and 0.07 is:

(a) 63
(b) 0.63
(c) 6.3
(d) 0.063

Q55. The HCF and LCM of two numbers are 11 and 330, respectively. If one of the numbers is 110, find the other one.

(a) 33
(b) 90
(c) 75
(d) 72

Q56. A sum of Rs. 10,000 amounts to Rs. 12,321 in 2 years at a certain rate of interest per annum, compounded annually. The rate of interest per annum is:

(a) 14%
(b) 15%
(c) 11%
(d) 10%

Q57. By how much is 65% of 75 greater than 2/5 of 45?

(a) 27.75
(b) 30.75
(c) 28.75
(d) 24.75

Q58. The cost of 6 pens and 19 pencils is Rs. 275. If the cost of a pen decreases by Rs. 7 and the cost of a pencil increases by Rs. 7, then the cost of 15 pens and 4 pencils is Rs. 132. What is the original cost of 6 pens and 2 pencils?

(a) Rs. 88

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(b) Rs. 92
(c) Rs. 89
(d) Rs. 90

Q59. Evaluate 145^2
(a) 20975
(b) 21025
(c) 21075
(d) 21005

Q60. If 2 times the mother's age is 26 years more than 4 times her daughter's age, and 3 times the daughter's age is 7 years less than the mother's age, then what is the difference (in years) between the ages of the mother and the daughter?
(a) 21
(b) 24
(c) 19
(d) 23

Q61. A company earns a profit (in Rs.) that is distributed among the company's three partners in the ratio of 5 : 8 : 17. If the difference between the smallest and the largest shares is Rs. 78,106, the total profit (in Rs.) of the company is:
(a) 1,95,278
(b) 1,95,361
(c) 1,95,302
(d) 1,95,265

Q62. A man driving a car at a speed of 54 km/hr crosses a bridge in 1.7 minutes. Find the length of the bridge.
(a) 2.58 km
(b) 2.13 km
(c) 1.53 km
(d) 0.92 km

Q63. Two cubes of edge 5 cm are joined to form a cuboid. Find the total surface area of the cuboid.
(a) 25 cm^2
(b) 250 cm2
(c) 100 cm2
(d) 125 cm2

Q64. Pipe P can fill 2/3 part of a tank in 24 hours, and pipe Q can fill 2/3 part of the same tank in 16 hours. Both P and Q were kept open for 4 hours, then both were closed. Pipe R alone was then opened and it emptied the water in the tank in 5 hours. Pipes P, Q and R together can fill the empty tank in:
(a) 72 hours
(b) 62 hours
(c) 88 hours
(d) 79 hours

Q65. Find the mean proportional between 19 and 76.
(a) 36
(b) 37
(c) 38
(d) 39

Q66. What smallest number should be added to 16809 so that the sum is completely divisible by 41?
(a) 3
(b) 2
(c) 1
(d) 4

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Q67. The selling price of 16 books is equal to the cost price of 8 books. Find the loss or gain percentage.

(a) 100/8% gain
(b) 50% gain
(c) 50% loss
(d) 100/8% loss

Q68. Find the simple interest (in Rs.) if a sum of Rs. 400 is borrowed for 5.5 years at 4% per annum rate of interest.

(a) 68
(b) 138
(c) 88
(d) 188

Q69. What is the equivalent single discount for successive discounts of 20% and 10%?

(a) 27%
(b) 25%
(c) 30%
(d) 28%

Q70. A can lay railway track between two given stations in 17 days and B can do the same job in 16 days. With the help of C, they did the job in 4 days only. Then, C alone can do the job in

(a) 1027/35 days
(b) 727/35 days
(c) 1327/35 days
(d) 1127/35 days

GENERAL INTELLIGENCE AND REASONING

Q71. Raghunandan walks 325 m towards the west to reach a cloth showroom. Then he turns to the right and walks 220 m straight to reach the fitness centre. Again, he turns to the right and walks for 200 m straight. Then, he turns to the right again and walks for 220 m. How far is he from the starting point?(All turns are 90-degree turns only, unless specified.)

(a) 125 m
(b) 120 m
(c) 105 m
(d) 150 m

Q72. What will come in place of the question mark (?) in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

28 + 125 × 5 − 12 ÷ 3 = ?

(a) 28
(b) 46
(c) 39
(d) 21

Q73. In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

37, 62

52, 77

(a) 81, 96
(b) 69, 88
(c) 64, 84

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(d) 46, 71

Q74. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

NUB 63, JQX 54, FMT 45, BIP 36, XEL 27, ?

(a) TAI 17
(b) UAH 20
(c) TMH 15
(d) TAH 18

Q75. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

(a) ORM
(b) VYT
(c) RUP
(d) LOI

Q76. What should come in place of the question (?) in the given series?

53 70 91 116 145 ?

(a) 171
(b) 194
(c) 186
(d) 178

Q77. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

(a) SV-UX
(b) DG-FI
(c) BE-DG
(d) EI-HK

Q78. Eight people, S, T, U, V, W, X, Y and Z, are sitting in a straight line. All are facing towards the north. S sits third from the extreme left end of the line. W is an immediate neighbour of V. Only U sits between S and W. Z is sitting at the extreme right end of the line. T is an immediate neighbour of both Y and S. How many people sit to the right of W?

(a) Three
(b) Four
(c) One
(d) Two

Q79. What should come in place of the question mark (?) in the given series?

442 530 626 730 842 ?

(a) 901
(b) 1025
(c) 962
(d) 1090

Q80. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

All forests are hills.

Some hills are deserts.

Conclusions:

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(I): All hills are forests.

(II): Some deserts are hills.

(a) Only Conclusion II follows
(b) Only Conclusion I follows
(c) Both Conclusions I and II follow
(d) Neither Conclusion I nor II follows

Q81. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

All bottles are ludo.

All ludo are dancer.

Conclusions:

(I): Some dancers are ludo.

(II): All bottles are dancers.

(a) Both conclusions (I) and (II) follow.
(b) Neither conclusion (I) nor (II) follows.
(c) Only conclusion (II) follows.
(d) Only conclusion (I) follows.

Q82. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

IUP -1 MRN -3 ? ULJ -27 YIH -81

(a) YFQ -7
(b) PQS -7
(c) QOL -9
(d) QOP -9

Q83. Shekhar ranked 7th from the top and 38th from the bottom in his class. How many students are there in his class?

(a) 42
(b) 45
(c) 44
(d) 43

Q84. In a certain code language, A + B means ‘A is the son of B’, A – B means ‘A is the sister of B’, A x B means ‘A is the wife of B’ and A ÷ B means ‘A is the father of B’.

How is Q related to D if ‘Q ÷ E – R x C + D’?

(a) Brother
(b) Father
(c) Son's wife's father
(d) Son's wife's brother

Q85. HOLN is related to XGBF in a certain way based on the English alphabetical order. In the same way, TIXH is related to JANZ. To which of the given options is PKTJ related, following the same logic?

(a) FCBJ
(b) FCBH
(c) FHBC
(d) FCJB

Q86. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

(a) JQN

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(b) HOK
(c) FMI
(d) LSO

Q87. What will come in place of the question mark (?) in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

26 × 2 − 21 + 7 ÷ 4 = ?

(a) 11
(b) 6
(c) 18
(d) 25

Q88. What should come in place of the question mark (?) in the given series?

934 924 925 915 916 906 ? 897

(a) 896
(b) 908
(c) 907
(d) 895

Q89. In a certain code language, 'MAZE' is coded as '3527' and 'AIDS' is coded as '2416'. What is the code for 'A' in the given code language?

(a) 4
(b) 2
(c) 1
(d) 5

Q90. WPKD is related to TNHB in a certain way based on the English alphabetical order. In the same way, KHYV is related to HFVT. To which of the given options is BBPP related, following the same logic?

(a) YZNM
(b) YMZN
(c) YZMN
(d) YZSD

Q91. If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 8317456, what will be the sum of the digits that are second from the left and second from the right?

(a) 6
(b) 12
(c) 10
(d) 8

Q92. This question is based on the five, three-digit numbers given below. (Left) 126 257 352 984 751 (Right)

(Example- 697 – First digit = 6, second digit = 9 and third digit = 7) (NOTE: All operations to be done from left to right.)

If 2 is added in the third digit of each number, how many numbers thus formed will be odd numbers?

(a) One
(b) Two
(c) Three
(d) None

Q93. Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) 2 % / < 9 $ / % 6 * 4 5 8 # ? > 2 2 + 2 \ (Right)

How many such symbols are there, each of which is immediately preceded by a number and also immediately followed by another symbol?

(a) Three

(b) One
(c) Two
(d) None

Q94. 1 is subtracted from each even digit of the number 95423671 and then the digits are arranged in ascending order from left to right. Find the sum of the digits that are second from the left and third from the right.

(a) 9
(b) 7
(c) 6
(d) 5

Q95. Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. Only four boxes are kept between C and F. Only A is kept above C. Only two boxes are kept between D and E. G is kept immediately above B. E is not kept immediately above G. How many boxes are kept above G?

(a) 1
(b) 3
(c) 4
(d) 2

Q96. Harini starts from Point Y and drives 7 km towards the south. She then takes a left turn, drives 14 km. She then turns left and drives 7 km. She takes a final left turn, drives 18 km and stops at Point Z. How far (shortest distance) and towards which direction should she drive in order to reach Point Y again? (All turns are 90-degree turns only unless specified)

(a) 10 km towards south
(b) 8 km towards west
(c) 1 km towards north
(d) 4 km towards east

Q97. Seven boxes F, G, H, I, K, L, and O are kept one over the other but not necessarily in the same order. Only three boxes are kept below H. Only two boxes are kept between H and O. Only L is kept above G. F is kept at some place below I and at some place above K. Which box is kept at second position from the bottom?

(a) O
(b) G
(c) F
(d) K

Q98. Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

HTO : DWK

XHE : TKA

(a) PNW : LQS
(b) FCV : KZQ
(c) HKV : ENS
(d) YFH : UKD

Q99. L, M, N, O, Q, R and S are sitting around a circular table, facing the centre of the table. Only one person sits between Q and S when counted from the right of Q. Only one person sits between S and N. Only one person sits between Q and R. Only two people sit between L and N. Only one person sits between O and R. Who sits third to the right of M?

(a) S
(b) L
(c) N
(d) O

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Q100. In a certain code language, 'BEST' is coded as '3527' and 'EARN' is coded as '1246'. What is the code for 'E' in the given code language?

(a) 2
(b) 5
(c) 1
(d) 6

ANSWER KEY

1	b	2	c	3	b	4	b	5	b	6	a	7	a	8	b	9	c	10	d
11	c	12	b	13	a	14	c	15	b	16	a	17	c	18	a	19	d	20	a
21	b	22	c	23	b	24	b	25	a	26	c	27	a	28	d	29	c	30	b
31	d	32	c	33	d	34	c	35	d	36	a	37	d	38	a	39	b	40	d
41	a	42	c	43	d	44	a	45	d	46	b	47	d	48	d	49	c	50	c
51	a	52	b	53	b	54	c	55	a	56	c	57	b	58	a	59	b	60	c
61	d	62	c	63	b	64	a	65	c	66	c	67	c	68	c	69	d	70	b
71	a	72	c	73	d	74	d	75	d	76	d	77	d	78	a	79	c	80	a
81	a	82	c	83	c	84	c	85	d	86	a	87	b	88	c	89	b	90	c
91	c	92	b	93	a	94	c	95	b	96	d	97	d	98	a	99	a	100	a

SOLUTIONS

Q1. Answer: (b) Six

The Correct answer is Six.

Key Points

• India has a federal parliamentary system and legislative bodies at both the central and state levels.

• A bicameral legislature consists of two houses: the Legislative Assembly (Vidhan Sabha) and the Legislative Council (Vidhan Parishad).

• As of July 2025, there are six Indian states with a bicameral legislature. These states are Uttar Pradesh, Maharashtra, Karnataka, Bihar, Andhra Pradesh, and Telangana.

• The Legislative Council is a permanent body and cannot be dissolved, but members retire in rotation.

• The creation or abolition of a Legislative Council is governed by Article 169 of the Indian Constitution. A state legislature can pass a resolution by a special majority to create or abolish a council.

• The Legislative Assembly, on the other hand, is directly elected by the people of the state and has significant powers, including passing state laws, budget approvals, and discussions on government policies.

• Bicameral legislatures are intended to ensure better representation of diverse interests and to provide a mechanism for deeper scrutiny of legislation.

• The states with bicameral legislatures represent a mix of large populations, economic significance, and historical contexts that justify the presence of two houses.

Additional Information

• Eight States

• India has only six states with bicameral legislatures, not eight. This option is incorrect as it suggests a higher number than the actual count.

• Seven States

• This option is incorrect as India has six states with bicameral legislatures, not seven.

• Five States

• While some states have unicameral legislatures, the number of states with bicameral legislatures in India is six, making this option incorrect.

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Q2. Answer: (c) State Legislative Assembly

The Correct answer is State Legislative Assembly.

Key Points

• The State Council of Ministers in India is collectively responsible to the State Legislative Assembly, as per Article 164 of the Indian Constitution.

• The State Legislative Assembly, also called the Vidhan Sabha, is the lower house of the state legislature in states with a bicameral legislature or the sole legislative body in states with a unicameral legislature.

• This principle of collective responsibility ensures that the council acts as a single entity and is accountable to the legislature for its policies and decisions.

• If the Legislative Assembly passes a vote of no confidence against the Council of Ministers, they are bound to resign collectively, including the Chief Minister.

• The Chief Minister, as the head of the Council of Ministers, plays a key role in ensuring the accountability of the council to the Legislative Assembly.

• This system is a fundamental aspect of the parliamentary system of government in India and is modeled on the British parliamentary system.

• The Legislative Assembly comprises elected representatives of the people, making it the most appropriate body for ensuring the accountability of the executive branch to the citizens.

Additional Information

• The Governor of the State

• The Governor is the constitutional head of the state and acts on the advice of the Council of Ministers headed by the Chief Minister.

• While the Governor appoints the Chief Minister and other ministers, the Council of Ministers is not collectively responsible to the Governor.

• The Governor has certain discretionary powers, but the executive powers of the state are exercised by the Council of Ministers.

• Council of States

• The Council of States, commonly referred to as the Rajya Sabha, is the upper house of the Indian Parliament and does not play a direct role in the functioning of state governments.

• It represents the interests of the states at the national level and primarily deals with matters concerning the Union and its territories.

• Chief Justice of the concerned State

• The Chief Justice of the High Court is the head of the judiciary in a state and ensures justice under the legal framework.

• The judiciary functions independently of the executive and legislature and does not have a role in the accountability of the Council of Ministers.

Q3. Answer: (b) Make in India

The Correct answer is Make in India.

Key Points

• Make in India is a flagship initiative launched by the Government of India on 25th September 2014.

• This program aims to transform India into a global manufacturing hub.

• It encourages both domestic manufacturing and attracts foreign direct investment (FDI) into the country.

• The initiative focuses on creating job opportunities and enhancing the ease of doing business.

• It targets key sectors such as automobiles, textiles, electronics, telecommunications, aviation, and renewable energy, among others.

• The campaign promotes innovation and aims to build a robust infrastructure to support industrial growth.

• Under this initiative, policies were revised to simplify regulations, increase transparency, and improve business processes.

• It aims to enhance India's position in global indices such as the Ease of Doing Business Index published by the World Bank.

• The initiative has supported several reforms like the introduction of Goods and Services Tax (GST), simplifying labor laws, and setting up dedicated investment promotion teams.

• The campaign encourages investment in industries while reducing reliance on imports.

Additional Information

• Digital India

• Digital India was launched in 2015 to transform India into a digitally empowered society and knowledge economy.

• Its focus is on providing digital infrastructure, improving digital literacy, and delivering government services electronically.

• Key initiatives under Digital India include DigiLocker, BHIM app, and Aadhaar integration.

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• Startup India
• Startup India was launched in 2016 to promote entrepreneurship and foster innovation.
• The initiative focuses on creating an ecosystem that supports startups and encourages sustainable economic growth.
• It offers various benefits, including tax exemptions, funding support, and ease of compliance for startups.
• Skill India
• Skill India was launched in 2015 to train and equip the Indian workforce with market-relevant skills.
• It aims to increase the employability of individuals and bridge the skill gap in various sectors.
• Programs under Skill India include the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) and National Skill Development Mission.

Q4. Answer: (b) Shah Jahan

The Correct answer is Shah Jahan.

Key Points

• The Red Fort, also known as Lal Qila, is a historical fortification in Delhi, India.
• It was built by the Mughal Emperor Shah Jahan in 1648 when he decided to shift his capital from Agra to Delhi.
• Construction of the fort began in 1638 and was completed in 1648.
• The fort is made of red sandstone and is a brilliant example of Mughal architecture.
• The Red Fort served as the residence of the Mughal emperors for nearly 200 years, until 1857.
• It is located in the center of Delhi and is a symbol of India's rich history and culture.
• The fort complex includes various structures such as the Diwan-i-Aam, Diwan-i-Khas, Rang Mahal, and the Moti Masjid.
• The fort is also the site where the Prime Minister of India hoists the national flag on Independence Day every year.
• The architectural design of the fort reflects a blend of Persian, Timurid, and Indian styles.

Additional Information

• Babur
• Babur was the founder of the Mughal Empire in India.
• He reigned from 1526 to 1530 and is known for his victory in the First Battle of Panipat in 1526.
• Babur’s architectural contributions were limited as his reign was relatively short.
• Aurangzeb
• Aurangzeb, the sixth Mughal emperor, ruled from 1658 to 1707.
• He is known for his expansion of the empire and a more orthodox style of governance.
• Aurangzeb is not associated with the construction of the Red Fort.
• Akbar
• Akbar, the third Mughal emperor, reigned from 1556 to 1605.
• He is renowned for his policy of religious tolerance and contributions to Mughal architecture, such as the Fatehpur Sikri.
• Though Akbar was a great patron of architecture, he did not construct the Red Fort in Delhi.

Q5. Answer: (b) Delhi

The Correct answer is Delhi.

Key Points

• Delhi became the 28th legislature to join the National e-Vidhan Application (NeVA) platform in March 2025.
• The National e-Vidhan Application (NeVA) is a mission mode project under the Digital India Programme aimed at making legislative processes paperless.
• This platform is designed to ensure transparency, efficiency, and accountability in the legislative process.
• NeVA facilitates the digitization of proceedings, including question papers, bills, committee reports, and discussions in legislatures.
• Delhi's adoption of NeVA aligns with the government's initiative to promote e-governance and sustainable practices.
• The move contributes to reducing the usage of paper and supports environmental conservation.
• The platform provides real-time information to legislators and citizens, ensuring better participation in the democratic process.

Additional Information

• Odisha
• Odisha is a state located in eastern India, known for its rich cultural heritage and historical significance.
• The state is famous for the Jagannath Temple in Puri and the Kalinga War, which influenced Emperor Ashoka to adopt Buddhism.
• Odisha is a major producer of minerals, including iron ore, coal, and bauxite.

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• Sikkim
• Sikkim is a small state in northeastern India, known for its natural beauty and Buddhist monasteries.
• It is home to Khangchendzonga National Park, a UNESCO World Heritage Site.
• Sikkim is the first Indian state to become fully organic in agricultural practices.
• Jharkhand
• Jharkhand is rich in mineral resources, especially coal, iron, copper, and bauxite.
• The state is known for its tribal heritage and natural landscapes, including Betla National Park.
• Ranchi is the capital city of Jharkhand.

Q6. Answer: (a) Bhagat Singh

The Correct answer is Bhagat Singh.

Key Points

• Bhagat Singh was a prominent Indian revolutionary known for his role in the freedom struggle.
• On April 8, 1929, Bhagat Singh and Batukeshwar Dutt threw bombs in the Central Legislative Assembly in Delhi.
• The act was aimed at protesting against the repressive Public Safety Bill and Trade Disputes Act introduced by the British government.
• The bombs were intentionally non-lethal, aimed at creating a loud noise to draw attention rather than causing harm.
• After throwing the bombs, Bhagat Singh and Dutt surrendered themselves to the British authorities, demonstrating their courage and commitment to the cause.
• Their act was followed by the distribution of leaflets emphasizing their message: "It takes a loud voice to make the deaf hear."
• Bhagat Singh became a symbol of revolutionary nationalism and inspired many young Indians to join the fight for independence.
• His ideas were influenced by socialism, and he envisioned an India free from exploitation and inequality.

Additional Information

• Chandrashekhar Azad
• Chandrashekhar Azad was another prominent revolutionary who played a crucial role in the Indian freedom struggle.
• He was a part of the Hindustan Socialist Republican Association (HSRA), which aimed to fight British imperialism.
• Azad is known for his bravery and his resolve to never be captured alive by the British, eventually fulfilling his promise by shooting himself in a confrontation with the police.
• Ashfaqulla Khan
• Ashfaqulla Khan was another revolutionary who contributed to the freedom struggle.
• He was a key member of the Kakori Conspiracy, where revolutionaries looted a train carrying British government funds.
• He was executed for his role in the conspiracy, becoming a martyr for India’s independence movement.
• Rajguru
• Shivaram Rajguru was a revolutionary who worked closely with Bhagat Singh and Sukhdev.
• He played a significant role in the assassination of John Saunders, a British officer, to avenge the death of Lala Lajpat Rai.
• Rajguru was executed alongside Bhagat Singh and Sukhdev on March 23, 1931, becoming one of the martyrs of India’s freedom struggle.

Q7. Answer: (a) Kirsty Coventry

The Correct answer is Kirsty Coventry.

Key Points

• Kirsty Coventry, a former swimmer from Zimbabwe, is known for her outstanding achievements in sports and governance.
• She made history as the first woman, the youngest person, and the first African to be elected as the President of the International Olympic Committee (IOC) in 2025.
• Kirsty Coventry has won seven Olympic medals, including two golds, making her one of the most decorated Olympians from Africa.
• Her election signifies a groundbreaking moment in the history of the IOC, emphasizing diversity, inclusion, and representation at the global sports governance level.
• She has also served as the Minister of Youth, Sport, Arts, and Recreation in Zimbabwe, showcasing her leadership and commitment to sports development in her country.
• Coventry's vision for the IOC includes promoting gender equality, enhancing athlete welfare, and fostering global collaboration in sports.
• Her historic election reflects the growing recognition of African contributions to international sports and leadership.

Additional Information

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• Tegla Loroupe

• Tegla Loroupe is a renowned Kenyan long-distance runner and a global sports icon.

• She is the first African woman to win the New York City Marathon.

• She is actively involved in peacebuilding efforts and founded the Tegla Loroupe Peace Foundation to promote harmony in conflict-affected regions.

• Fatma Samoura

• Fatma Samoura is a Senegalese diplomat and the first woman to serve as the Secretary General of FIFA.

• Her appointment in 2016 marked a significant milestone in football governance.

• She has worked on enhancing transparency and integrity within FIFA.

• Nawal El Moutawakel

• Nawal El Moutawakel from Morocco is a former Olympic athlete and a pioneering female figure in sports governance.

• She won the gold medal in the 400-meter hurdles at the 1984 Summer Olympics, becoming the first African and Arab woman to achieve this feat.

• She has served as a member of the International Olympic Committee and has contributed significantly to promoting women's participation in sports.

Q8. Answer: (b) Samudragupta

The Correct answer is Samudragupta.

Key Points

• Samudragupta, a ruler of the Gupta dynasty, is often referred to as the 'Napoleon of India' because of his remarkable military achievements and strategic warfare skills.

• He undertook extensive military campaigns to expand the Gupta Empire, which covered a major portion of the Indian subcontinent during his reign.

• Samudragupta's conquests included regions in North India, Central India, and parts of South India.

• He defeated numerous kings and established his authority over a vast empire, showcasing his strong military prowess.

• Samudragupta was also known for his policy of ‘Dharmavijaya’ (victory through righteousness), which emphasized winning people's loyalty and respect rather than mere territorial conquest.

• His achievements were recorded in the Allahabad Pillar Inscription, composed by his court poet, Harisena.

• Besides his military accomplishments, Samudragupta was a patron of arts and culture. He was an accomplished musician and supported various forms of creative expression.

• Samudragupta's reign is considered the golden age of Indian history, marked by significant advancements in administration, culture, and economic prosperity.

Additional Information

• Chandragupta I

• Chandragupta I was the founder of the Gupta Empire and reigned around 320 CE.

• He laid the foundation for the Gupta dynasty by consolidating territories and forming alliances through marriage, notably with the Lichchhavi dynasty.

• His reign marked the beginning of the Gupta calendar, an important historical landmark.

• Kumaragupta

• Kumaragupta I was another notable ruler of the Gupta dynasty who ruled during the 5th century CE.

• He is famous for establishing the Nalanda University, one of the ancient world's most renowned centers of learning.

• Despite facing challenges from external invasions, Kumaragupta maintained the stability of the empire during his reign.

• Skandagupta

• Skandagupta was a Gupta emperor who is known for his military defense against the Huna invasions.

• He succeeded in repelling the Hunas and ensured the security of the Gupta Empire during his reign.

• Skandagupta is also credited with maintaining the administrative and economic stability of the empire despite external threats.

Q9. Answer: (c) Iceland

The Correct answer is Iceland.

Key Points

• Iceland has consistently ranked at the top in the Global Gender Gap Report, including the 2024 edition.

• It is the only country that has successfully closed over 90% of its gender gap, as per the report.

• The Global Gender Gap Report is an annual report published by the World Economic Forum (WEF) to measure gender parity across four key dimensions: Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political

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Empowerment.

• Iceland's top position is attributed to its progressive policies on gender equality, including its efforts in ensuring equal pay, representation in political and economic sectors, and access to education and healthcare.

• Iceland has been a global leader in promoting women empowerment and has achieved significant milestones such as having equal representation in parliament and implementing laws that promote gender balance in corporate boards.

• The country's commitment to achieving gender parity is widely recognized as a model for other nations worldwide.

• Iceland's success highlights the importance of progressive policies and societal commitment to reducing gender disparities in various fields.

Additional Information

• Finland

• Finland is known for its advanced social welfare system and progressive policies on gender equality.

• It has been recognized for promoting equal rights in education, healthcare, and economic participation.

• Finland has also made significant strides in women's political participation, with a high percentage of women in government roles.

• Norway

• Norway is widely regarded as a leader in gender equality and is consistently ranked among the top nations in the Global Gender Gap Report.

• The country enforces strict equal pay laws and has implemented measures to ensure women's representation in leadership positions.

• Norway is also known for its parental leave policies, which promote gender equality in childcare responsibilities.

• Sweden

• Sweden has a reputation for being one of the most gender-equal countries in the world.

• The country has implemented comprehensive policies to promote gender parity in workplaces, education, and governance.

• Sweden's progressive stance on gender equality has resulted in substantial advancements, particularly in terms of economic participation and political empowerment.

Q10. Answer: (d) heterogeneous mixture

The Correct answer is heterogeneous mixture.

Key Points

• Although a colloid appears to be homogeneous, it is actually a heterogeneous mixture.

• A colloid consists of two phases: the dispersed phase (particles) and the dispersing medium (continuous phase).

• The particles in a colloid are microscopic and do not settle at the bottom over time, making it look uniform.

• Colloids exhibit the Tyndall effect, where light is scattered due to the dispersed particles.

• The size of colloidal particles typically ranges between 1 nanometer and 100 nanometers, distinguishing it from other mixtures.

• Examples of colloids include milk, fog, and jelly.

• This heterogeneous nature is critical for the unique properties of colloids, such as their stability and ability to scatter light.

Additional Information

• Suspension

• A suspension is a heterogeneous mixture where the particles are large enough to settle out over time.

• Examples include sand in water or muddy water.

• Suspensions do not exhibit the Tyndall effect as the particles are too large to scatter light effectively.

• True solution

• A true solution is a homogeneous mixture where the solute is completely dissolved in the solvent.

• Examples include sugar in water or salt in water.

• True solutions do not exhibit the Tyndall effect as the particles are molecular in size.

• Homogeneous mixture

• A homogeneous mixture has a uniform composition throughout, such as air or vinegar.

• It does not have any dispersed particles or phases, making it different from a colloid.

• Homogeneous mixtures do not scatter light and are transparent when in liquid form.

Q11. Answer: (c) The file is sent to the Recycle Bin.

The correct answer is The file is sent to the Recycle Bin.

Key Points

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• When you delete a file or folder using the Delete key on a Windows computer, the file is not permanently deleted. Instead, it is sent to the Recycle Bin.

• The Recycle Bin serves as a temporary storage location for deleted files, allowing users to restore files that may have been deleted accidentally.

• Files remain in the Recycle Bin until the user manually empties it or it reaches its storage limit, after which the oldest files are removed automatically.

• This feature acts as a safeguard against accidental deletion and ensures that users have the ability to recover important files if needed.

• To permanently delete a file without moving it to the Recycle Bin, users can use the Shift + Delete keyboard shortcut.

• The Recycle Bin is typically accessible from the desktop, and users can review and restore files by right-clicking on them and selecting the Restore option.

• The functionality of the Recycle Bin is a built-in feature of Windows operating systems and is widely used to manage deleted files efficiently.

Additional Information

• The file is copied to another folder.

• This option is incorrect because deleting a file does not copy it to another folder.

• Copying a file requires a separate action, such as using the Ctrl + C and Ctrl + V keyboard shortcuts or the context menu options.

• The file is renamed automatically.

• This option is incorrect because deleting a file does not rename it automatically.

• Renaming a file requires the user to manually select the file, right-click on it, and choose the Rename option or use the F2 key.

• The file is permanently deleted without warning.

• This option is incorrect because files deleted using the Delete key are not permanently removed.

• Permanently deleting files typically involves using the Shift + Delete keyboard combination, bypassing the Recycle Bin.

Q12. Answer: (b) Nepal and Bhutan

The Correct answer is Nepal and Bhutan.

Key Points

• Nepal and Bhutan are the two neighbouring countries of India that are completely landlocked.

• Being landlocked means these countries have no access to the sea or ocean.

• Both Nepal and Bhutan share only land borders with India and do not have any coastline or maritime boundary.

• Nepal is bordered by India on three sides (east, south, and west) and by China in the north.

• Bhutan shares its borders with India in the south, east, and west, while it is bordered by China in the north.

• These two countries are situated in the Himalayan region and are known for their mountainous terrain.

• Nepal is famous for housing the world’s highest peak, Mount Everest, while Bhutan is known for its Gross National Happiness Index.

• Both countries maintain strong historical, cultural, and economic ties with India.

Additional Information

• Bangladesh and Myanmar

• Bangladesh is not landlocked as it has access to the Bay of Bengal.

• Myanmar also has access to the Bay of Bengal and is not landlocked.

• These two countries share both land and maritime borders with India.

• Pakistan and China

• Pakistan is not landlocked as it has access to the Arabian Sea.

• China is also not landlocked as it has access to the East China Sea, South China Sea, and Yellow Sea.

• While these countries share land borders with India, they are not entirely landlocked.

• Sri Lanka and Maldives

• Sri Lanka is an island nation located in the Indian Ocean and does not share land borders with India.

• Maldives is a group of islands in the Indian Ocean and also does not have land borders with India.

• Both countries are surrounded by water and are not landlocked.

Q13. Answer: (a) 68°7'E and 97°25'E

The Correct answer is 68°7'E and 97°25'E.

Key Points

• The longitudinal extent of India ranges from 68°7'E to 97°25'E.

• This longitudinal range spans approximately 29° in length.

• The longitudinal extent determines the time zone of India, which is calculated based on the 82°30'E longitude (Indian Standard Time or IST).

• India's longitudinal extent plays a crucial role in influencing sunrise and sunset timings across different parts of the country.

• The longitudinal spread contributes to the country's diverse climatic zones, with eastern and western parts experiencing slight differences in weather patterns.

• The easternmost point of India is near Kibithu, Arunachal Pradesh, while the westernmost point is near Guhar Moti, Gujarat.

• India’s longitudinal extent facilitates trade and connectivity with neighboring countries, especially to the east and west.

Additional Information

• Incorrect Options

• 56°7'E and 87°25'E: This range does not match the actual longitudinal extent of India. The values are smaller and do not encompass the eastern and western limits of the country.

• 58°7'E and 94°25'E: These values are incorrect as they fail to cover India's full longitudinal range.

• 54°7'E and 77°25'E: This range is too narrow and does not represent the true longitudinal extent of India.

Q14. Answer: (c) Dr. Ajay Kumar

The Correct answer is Dr. Ajay Kumar.

Key Points

• Dr. Ajay Kumar was appointed as the new Chairman of the Union Public Service Commission (UPSC) in May 2025.

• He has an extensive career in the Indian Administrative Services (IAS) and has held significant positions in the government.

• As the Chairman of UPSC, Dr. Ajay Kumar is responsible for conducting prestigious exams such as the Civil Services Examination, which recruits candidates for India’s top administrative positions.

• The UPSC is a constitutional body under Article 315 of the Indian Constitution, tasked with conducting exams and advising the government on recruitment, transfers, and disciplinary matters.

• Dr. Ajay Kumar’s leadership and administrative expertise are expected to enhance the efficiency and fairness of the recruitment process in one of India’s most esteemed institutions.

• The appointment of the UPSC Chairman is a crucial decision, as the commission plays a vital role in selecting candidates for the nation’s administrative machinery.

Additional Information

• Shri Rajesh Verma

• Shri Rajesh Verma is a senior Indian Administrative Service (IAS) officer. He has served in various capacities, including as the Secretary to the Government of India.

• He has contributed to policy-making in sectors such as finance and corporate affairs.

• Dr. Anil Kumar

• Dr. Anil Kumar is a prominent name in the field of science and technology.

• He has worked in research and development and contributed to various projects in his domain.

• Ms. Priya Sharma

• Ms. Priya Sharma is a known personality in academics and public service.

• She has been involved in activities related to education reforms and social development.

Q15. Answer: (b) Munshi Premchand

The Correct answer is Munshi Premchand.

Key Points

• Munshi Premchand is one of the most celebrated authors in modern Hindi and Urdu literature.

• His novel Godaan, meaning "The Gift of a Cow," is considered a masterpiece and a cornerstone of Hindi literature.

• Godaan was published in 1936 and showcases the struggles of rural Indian farmers during British colonial rule.

• The novel portrays the life of Hori Mahato, a poor farmer, and highlights themes like poverty, exploitation, and societal norms.

• It is known for its deep insight into the lives of common people and its critique of societal injustices.

• Munshi Premchand has also written other famous works such as Sevasadan, Rangbhoomi, Gaban, and Nirmala.

• He is often referred to as the "Upanyas Samrat," meaning the King of Novels in Hindi literature.

Additional Information

• Bankim Chandra Chatterjee

• Bankim Chandra Chatterjee was a renowned Bengali writer and poet.

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• He is best known for his novel Anandamath, which includes the patriotic song Vande Mataram.
• He played a significant role in the Bengal Renaissance and is considered one of the greatest writers in Bengali literature.
• RK Narayan
• RK Narayan is one of India's greatest English-language authors.
• He is famous for his fictional town of Malgudi, which appears in many of his works.
• His notable works include The Guide, Swami and Friends, and The English Teacher.
• RK Narayan's writing style is characterized by simplicity and humor, often depicting everyday life in Indian villages and towns.
• Rabindranath Tagore
• Rabindranath Tagore was a Nobel Laureate in Literature and is best known for his collection of poems Gitanjali.
• He composed the national anthems of both India and Bangladesh.
• Tagore was a polymath, excelling in poetry, literature, music, and painting.
• Some of his other famous works include Chokher Bali, Ghare Baire, and Kabuliwala.

Q16. Answer: (a) Ministry of External Affairs

The Correct answer is Ministry of External Affairs.

Key Points

• The Ministry of External Affairs (MEA) is responsible for India's external relations, including diplomacy, trade, cultural exchange, and international cooperation.
• The Global Technology Summit (GTS) is an annual event that focuses on technological advancements, policy discussions, and global collaboration.
• The 9th edition of GTS, held in April 2025 in New Delhi, is co-organized by MEA and Carnegie India, emphasizing India's role in global technological leadership.
• The summit brings together experts, policymakers, industry leaders, and academics to deliberate on emerging technologies and their impact on society, economy, and governance.
• The Ministry of External Affairs plays a pivotal role in forging international partnerships, facilitating cooperation, and showcasing India's achievements in technology and innovation.
• By hosting such events, MEA highlights India's commitment to being a leader in the field of technology and its application for global development.

Additional Information

• Ministry of Information and Broadcasting
• The Ministry of Information and Broadcasting is responsible for the formulation and administration of rules and regulations related to information, broadcasting, and cinema in India.
• It primarily focuses on media, entertainment, and public awareness campaigns.
• It oversees organizations like Prasar Bharati (Doordarshan and All India Radio), and the Press Information Bureau.
• Ministry of Communications
• The Ministry of Communications handles policies related to telecommunications and postal services.
• It oversees departments like the Department of Telecommunications (DoT) and India Post.
• Its focus is on expanding connectivity and digital infrastructure across India.
• Ministry of Electronics and Information Technology
• The Ministry of Electronics and Information Technology (MeitY) deals with the promotion and development of the IT industry and digital governance in India.
• It is responsible for initiatives such as Digital India, e-Governance, and cybersecurity policies.
• MeitY supports innovation and startups in the field of technology but does not oversee international relations directly, which is the domain of MEA.

Q17. Answer: (c) File Explorer

The Correct answer is File Explorer.

Key Points

• File Explorer is a built-in application in the Windows operating system that helps users manage and organize files and folders effectively.
• It allows users to browse, search, copy, move, delete, rename, and organize files and directories on their computer or connected devices.
• Introduced as Windows Explorer in earlier versions, it was renamed File Explorer in Windows 8.
• The interface of File Explorer is user-friendly, consisting of features such as the Quick Access Toolbar, Search Bar, and

Navigation Pane.

• File Explorer supports various file formats, allowing users to preview files, sort them by categories like name, type, size, and date modified, and access properties of files and folders.

• It is essential for accessing drives, network locations, and external storage devices like USB drives or external hard drives.

• Keyboard shortcuts, such as Ctrl + X (cut), Ctrl + C (copy), and Ctrl + V (paste), enhance the functionality of File Explorer.

• File Explorer is crucial for organizing digital data and helps users ensure efficient file management practices.

Additional Information

• Paint

• Paint is a basic graphics editing tool included in the Microsoft Windows operating system.

• It allows users to create and edit simple images, drawings, and designs using tools like the pencil, brush, and shapes.

• Paint supports basic file formats such as .BMP, .JPEG, .PNG, and .GIF.

• It is not designed for file or folder management but rather for graphic-related tasks.

• Recycle Bin

• The Recycle Bin is a feature in the Windows operating system used for storing deleted files and folders temporarily.

• It allows users to restore accidentally deleted files or permanently delete them.

• Recycle Bin is primarily focused on file recovery and does not provide file organization or management capabilities.

• Task Manager

• Task Manager is a Windows tool used for monitoring the performance of the system and managing running processes and applications.

• It provides details about CPU, memory, disk usage, and network activity.

• While Task Manager is essential for troubleshooting and managing system resources, it does not offer file management functionalities.

Q18. Answer: (a) Multi-Influence Ground Mine

The Correct answer is Multi-Influence Ground Mine.

Key Points

• The Multi-Influence Ground Mine is an indigenously developed underwater naval mine designed by the Defence Research and Development Organisation (DRDO) in collaboration with the Indian Navy.

• This mine is equipped with advanced technologies to detect and target enemy vessels based on multiple influence parameters such as magnetic, acoustic, pressure, and seismic signatures.

• The successful testing of this mine demonstrates India's progress in developing self-reliant defence technology and contributes to the Make in India initiative.

• The Multi-Influence Ground Mine plays a key role in enhancing the underwater defence capabilities of the Indian Navy.

• Its advanced features provide strategic advantages in maritime warfare and bolster India's security in the Indian Ocean Region.

• The testing conducted in May 2025 validates its performance, reliability, and operational efficiency in real-world conditions.

Additional Information

• Barak Mine

• The term "Barak Mine" is not associated with any known underwater naval mine developed by India.

• However, the name "Barak" is linked to the Barak missile system, a surface-to-air missile jointly developed by India and Israel, which is used for naval defence.

• Sea Dragon

• "Sea Dragon" is not a recognized underwater naval mine developed by India.

• The term could refer to a maritime exercise or a codename used for some naval equipment globally but does not pertain to India's defence technology.

• Varunastra

• Varunastra is an advanced heavyweight torpedo developed indigenously by the DRDO for the Indian Navy.

• It is designed for deployment from submarines and surface ships to target enemy vessels.

• Unlike mines, torpedoes are actively propelled and guided, making them different from the passive nature of underwater mines.

Q19. Answer: (d) QNu Labs

The Correct answer is QNu Labs.

Key Points

• QNu Labs is an Indian quantum technology startup selected by the Department of Science and Technology (DST) under the National Quantum Mission (NQM).

• In April 2025, QNu Labs launched the world's first quantum platform named QShield, which facilitates seamless cryptography management.

• This platform is designed to address the growing concerns of data security in the digital era by leveraging quantum cryptography technologies.

• QShield ensures that sensitive data remains secure against future threats, including those posed by quantum computers.

• The platform is part of India's effort to strengthen its position in the field of quantum computing and cryptographic technologies under the National Quantum Mission (NQM).

• The National Quantum Mission (NQM) was launched by the Government of India to promote the development of quantum science and technology within the country.

• QNu Labs is known for its innovation in quantum-safe cryptography, providing solutions like Quantum Key Distribution (QKD) and Quantum Random Number Generators (QRNG).

Additional Information

• AMu Labs

• AMu Labs is a startup working in the field of advanced materials and technology.

• It focuses on creating innovative solutions for industries such as energy, infrastructure, and environmental sustainability.

• However, it has not been associated with quantum cryptography or QShield.

• SST Labs

• SST Labs is known for its contributions in semiconductor and system technology.

• It focuses on the development of hardware solutions for computing and communications but has no known involvement with the National Quantum Mission (NQM).

• CCS Labs

• CCS Labs is primarily involved in communication systems and networking research.

• It contributes to the field of wireless communication and signal processing, and is not linked with quantum cryptography innovations.

Q20. Answer: (a) Atoms cannot be created or destroyed in a chemical reaction.

The correct answer is Atoms cannot be created or destroyed in a chemical reaction.

Key Points

• The statement "Atoms cannot be created or destroyed in a chemical reaction" aligns directly with the Law of Conservation of Mass, which states that mass in a closed system remains constant during a chemical reaction.

• Dalton's atomic theory postulated that atoms are indestructible and unchangeable. This principle ensures that the total mass of reactants and products in a chemical reaction remains equal.

• The Law of Conservation of Mass was formulated by Antoine Lavoisier, who demonstrated that matter cannot be created or destroyed, only transformed.

• This concept is fundamental in chemical equations, where the number of atoms of each element must be balanced on both sides of the reaction.

• Dalton's idea strengthened the understanding of chemical processes, emphasizing that no atom vanishes or appears during reactions, ensuring the conservation of matter.

• This principle forms the basis of stoichiometry, which deals with the calculation of reactants and products in chemical reactions.

• It is particularly significant in industries such as pharmaceuticals, petrochemicals, and material science, where precise chemical reactions are crucial.

Additional Information

• Atoms of different elements have different masses and properties.

• This postulate highlights the unique identity of each element, as the atoms of one element differ in mass, size, and chemical properties from atoms of other elements.

• It explains why different elements exhibit distinct behaviors, forming compounds with specific properties.

• This principle is crucial in understanding the Periodic Table, where elements are arranged based on their atomic properties.

• Atoms combine in simple whole-number ratios to form compounds.

• This postulate is related to the Law of Definite Proportions, which states that chemical compounds are composed of elements in fixed ratios by mass.

• For example, water (H2O) always consists of two hydrogen atoms and one oxygen atom.

• It forms the foundation for understanding chemical bonding and molecular structures.

• All matter is made up of indivisible particles called atoms.

• This postulate introduced the idea that atoms are the basic building blocks of matter.

• Though later developments in science showed that atoms can be divided into subatomic particles, the concept remains

fundamental to understanding matter's structure.

• It is crucial in the fields of physics, chemistry, and material science for studying the properties and behavior of matter.

Q21. Answer: (b) Upgrading skills of rural youth to tackle unemployment

The Correct answer is Upgrading skills of rural youth to tackle unemployment.

Key Points

• TRYSEM stands for Training for Rural Youth for Self Employment.

• The program was launched by the Government of India in 1979 as a part of the Integrated Rural Development Program (IRDP).

• The primary aim of TRYSEM was to provide technical and entrepreneurial skills to rural youth between the ages of 18 to 35 years, enabling them to find self-employment opportunities.

• It focused on providing training in various vocational skills, such as carpentry, tailoring, mechanics, masonry, and other trades, which were demand-driven and suited for rural areas.

• The program targeted economically and socially weaker sections, including Scheduled Castes (SC), Scheduled Tribes (ST), women, and other underprivileged groups.

• TRYSEM aimed to reduce rural unemployment and enhance the productivity of youth by aligning their skills with local employment opportunities.

• It was implemented through collaboration between government agencies, non-government organizations (NGOs), and private institutions.

• Post-training, the participants were often provided assistance to start their own enterprises or were linked with credit schemes like IRDP to help them establish their businesses.

Additional Information

• Offering free education in rural areas

• This option refers to initiatives aimed at providing free education to rural communities, but it is unrelated to TRYSEM, which is focused on skill development for self-employment.

• Programs like Samagra Shiksha or Mid-Day Meal Scheme are examples of government efforts to improve education access in rural India.

• Providing loans to farmers

• This option focuses on financial assistance to farmers, typically offered through schemes like Kisan Credit Card (KCC) or PM Kisan Yojana.

• While TRYSEM indirectly helped beneficiaries by linking them with credit schemes, its main objective was skill development, not direct loan provision.

• Building infrastructure in villages

• Building rural infrastructure is often the focus of programs like PMGSY (Pradhan Mantri Gram Sadak Yojana) or MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act).

• TRYSEM did not focus on physical infrastructure development but rather on human resource development.

Q22. Answer: (c) Religious tolerance

The Correct answer is Religious tolerance.

Key Points

• Religious tolerance was not a cause of resentment against British rule before 1857.

• The British did not impose any strict policies targeting religious practices or belief systems of Indians during this period.

• While there were cultural and religious tensions, this was not due to the British promoting religious tolerance, but rather their interference in certain practices like the abolition of Sati and introduction of reforms such as the Widow Remarriage Act.

• In fact, some Indians saw the British as interfering in their religious practices rather than promoting tolerance.

• The resentment before 1857 was primarily fueled by economic, social, and racial factors, rather than religious tolerance.

• Key causes of resentment included economic exploitation, land revenue policies, and the perception of British racial superiority.

Additional Information

• Low wages

• Low wages were a significant reason for dissatisfaction among Indian workers and soldiers employed under British rule.

• Indian soldiers in the British army were paid much less compared to their British counterparts, which led to economic disparity and discontent.

• The exploitation of Indian labor in factories, plantations, and administrative roles also contributed to resentment.

• High taxes

• High taxes were a major grievance against British rule before 1857.

• The British introduced exploitative land revenue systems like the Permanent Settlement, which forced farmers to pay high taxes

irrespective of their agricultural yield.

• This led to widespread poverty, famine, and dispossession among Indian peasants.

• Racial discrimination

• Racial discrimination was rampant under British rule and a major cause of resentment.

• Indians were treated as inferior to Europeans, both socially and politically.

• Indians were excluded from higher administrative positions and faced systemic discrimination in various spheres of life.

Q23. Answer: (b) Violin

The Correct answer is Violin.

Key Points

• Dr. Lakshminarayana Subramaniam is an internationally acclaimed violinist, composer, and conductor.

• He is often referred to as the "Paganini of Indian Classical Music" for his unmatched virtuosity and contributions to music.

• He has mastery in both Carnatic music (South Indian classical music) and Western classical music.

• Dr. Subramaniam has collaborated with numerous global artists and orchestras, including Yehudi Menuhin, Stephan Grapelli, and the New York Philharmonic Orchestra.

• He is renowned for his innovative compositions that blend Indian and Western musical traditions.

• His work also extends to creating music for films, including compositions for prominent Indian movies.

• Dr. Subramaniam has received several honors, including the prestigious Padma Bhushan and Padma Vibhushan awards for his contributions to music.

• The violin is a string instrument that plays a significant role in Indian classical music, especially Carnatic music, where it is often used as an accompaniment to vocal performances.

Additional Information

• Shehnai

• The Shehnai is a traditional Indian wind instrument, commonly used in weddings and religious ceremonies.

• It is known for its melodious and auspicious sound.

• Famous Shehnai maestro Ustad Bismillah Khan popularized the instrument globally.

• Sitar

• The Sitar is a plucked string instrument widely used in Hindustani classical music.

• It is known for its rich tonal quality and complex design.

• Legendary musicians such as Ravi Shankar and Anoushka Shankar have brought international recognition to the Sitar.

• Flute

• The Flute is a woodwind instrument, significant in both Indian classical and Western music traditions.

• In Indian classical music, the flute is often associated with Lord Krishna.

• Renowned flutists like Pt. Hariprasad Chaurasia have popularized the flute globally.

Q24. Answer: (b) Divine origin or claim to divinity

The Correct answer is Divine origin or claim to divinity.

Key Points

• The title Devaputra translates to "Son of God" and reflects the Kushana rulers' assertion of their divine status.

• The Kushana rulers, especially Kanishka I, adopted this title to showcase their divine legitimacy and reinforce their authority.

• This title likely has connections to Buddhist and Central Asian traditions, emphasizing the ruler's divine lineage and spiritual significance.

• The Kushanas were known for blending Hellenistic, Indian, and Central Asian influences in their culture and governance, and such titles helped reinforce their image as universal rulers.

• The use of divine titles was a common practice in ancient monarchies to strengthen the ruler’s claim to power by associating them with divine or supernatural authority.

• The Kushanas were instrumental in spreading Mahayana Buddhism, which also emphasized divine elements, aligning well with their use of such titles.

Additional Information

• Hereditary monarchy

• A hereditary monarchy refers to a system of governance where the throne is passed down through familial lineage.

• While the Kushanas practiced hereditary monarchy, the title Devaputra emphasized divine association rather than hereditary rule.

• Heir to Mauryan traditions

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• The Kushanas ruled after the Mauryan Empire but were not direct heirs to Mauryan traditions.
• They established their own unique identity and culture, blending Greek, Indian, and Central Asian influences.
• Protector of Dharma
• Although the Kushanas were promoters of Buddhism, the title Devaputra specifically refers to divine origin rather than being solely a protector of dharma.
• They were instrumental in the spread of Mahayana Buddhism, but the title was more about divine authority.

Q25. Answer: (a) Kiran Rao

The Correct answer is Kiran Rao.

Key Points

• Kiran Rao is a renowned Indian filmmaker and producer, known for her unique storytelling and direction.
• She is the director of the film 'Laapataa Ladies', which won Best Picture at the 2025 IIFA Awards, showcasing her exceptional talent and creativity.
• Her work often highlights social issues and explores unconventional themes in Indian cinema.
• Kiran Rao has also made a significant impact on the industry through her contributions to independent cinema and her collaborations with other creative minds.
• She gained prominence with her directorial debut 'Dhobi Ghat', which was critically acclaimed for its innovative narrative and artistic approach.
• She has been associated with projects that emphasize progressive storytelling and promote diverse voices in the Indian film industry.
• Her work has been instrumental in bringing a fresh perspective to mainstream Bollywood cinema.

Additional Information

• Yash Chopra
• Yash Chopra was an iconic Indian filmmaker and producer, known for his romantic and dramatic films.
• He is often referred to as the 'King of Romance' in Indian cinema for his films like 'Dil To Pagal Hai' and 'Veer-Zaara'.
• He founded the production company Yash Raj Films, which is one of the leading film production houses in India.
• While he made a significant contribution to Bollywood, Yash Chopra was not involved in the making of 'Laapataa Ladies.'
• Farhan Akhtar
• Farhan Akhtar is an Indian actor, director, producer, and singer known for his versatility.
• He directed the critically acclaimed films 'Dil Chahta Hai' and 'Lakshya', which marked a new era in Bollywood.
• While Farhan Akhtar is known for his innovative direction, he was not the director of 'Laapataa Ladies.'
• Karan Johar
• Karan Johar is a prominent Indian filmmaker and producer known for his glamorous and family-centric films.
• He is the director of blockbuster hits like 'Kabhi Khushi Kabhie Gham' and 'Student of the Year.'
• Karan Johar's style is different from the storytelling approach seen in 'Laapataa Ladies,' which was directed by Kiran Rao.

Q26. Answer: (c) Flower

The correct answer is Flower.

Key Points

• The flower is the reproductive structure in angiosperms (flowering plants).
• It contains the male reproductive organ (stamens) and the female reproductive organ (carpels).
• Stamens produce pollen grains, which contain the male gametes.
• Carpels contain the ovary, which houses the ovules (female gametes).
• Pollination is a crucial process where pollen is transferred from the stamen to the stigma of the carpel, enabling fertilization.
• After fertilization, the ovule develops into a seed, and the ovary matures into a fruit.
• Flowers also attract pollinators like bees, butterflies, and birds, which play a significant role in sexual reproduction.
• The structure and color of the flower are often adaptations to enhance pollination and ensure the survival of the species.

Additional Information

• Stem
• The stem primarily functions as a support structure, holding up leaves, flowers, and fruits.
• It also serves as a conduit for the transport of water, nutrients, and food between roots and leaves.
• Stems do not play a direct role in sexual reproduction.
• Leaf

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• The leaf is the primary site of photosynthesis in plants, where they produce food using sunlight, carbon dioxide, and water.
• While leaves can sometimes be involved in vegetative reproduction, they are not associated with sexual reproduction.
• Root
• The root anchors the plant in the soil and absorbs water and nutrients required for growth.
• Roots may also store food but are not related to sexual reproduction in flowering plants.

Q27. Answer: (a) natural gas

The Correct answer is Natural Gas.

Key Points

• The Hazira-Vijaipur-Jagdishpur (HVJ) pipeline is one of the largest natural gas pipelines in India.
• The pipeline primarily serves to transport natural gas from the gas fields located in Hazira, Gujarat, to various destinations in northern and western parts of India, including Vijaipur in Madhya Pradesh and Jagdishpur in Uttar Pradesh.
• This pipeline was commissioned in 1986 and is operated by GAIL (Gas Authority of India Limited).
• The HVJ pipeline has played a crucial role in reducing India's dependency on oil by encouraging the usage of natural gas, which is a cleaner and more environmentally friendly fuel source.
• It supports various sectors such as power generation, fertilizer production, and industrial applications by providing a steady supply of natural gas.
• The pipeline infrastructure is approximately 1750 km long, making it one of the largest pipelines in the world for natural gas transportation.
• The HVJ pipeline also supports the Indian government's mission to promote cleaner energy alternatives and reduce carbon emissions.

Additional Information

• Petrol
• Petrol, also known as gasoline, is a derivative of crude oil that is widely used as a fuel in internal combustion engines.
• It is not transported via the HVJ pipeline, as it is mainly transported through specialized tanker trucks, trains, or dedicated liquid pipelines.
• Petrol is highly flammable and used primarily as a fuel for vehicles.
• Crude Oil
• Crude oil is a naturally occurring liquid fossil fuel found in geological formations beneath the Earth's surface.
• It is processed in refineries to produce a variety of products, including petrol, diesel, kerosene, and other petrochemicals.
• Crude oil is transported through pipelines, tankers, or by rail, but the HVJ pipeline is not designed for crude oil transportation.
• Kerosene
• Kerosene is a liquid fuel derived from the distillation of petroleum and is commonly used for cooking, lighting, and as jet fuel.
• It is not transported through the HVJ pipeline, as the pipeline is specifically designed for the transportation of natural gas.

Q28. Answer: (d) Sikkim

The Correct answer is Sikkim.

Key Points

• Sikkim is the Indian state that shares its borders with China, Nepal, and Bhutan.
• It is located in the northeastern part of India and is known for its beautiful landscapes and biodiversity.
• Sikkim shares a border with China in the north and northeast.
• It shares a border with Nepal to the west.
• It shares a border with Bhutan to the southeast.
• Sikkim is also bordered by the Indian state of West Bengal to its south.
• It is famous for the Khangchendzonga National Park, a UNESCO World Heritage Site.
• The capital of Sikkim is Gangtok, and the state is known for its rich cultural heritage and unique traditions.
• Sikkim also hosts the highest mountain in India, Mount Kanchenjunga.
• The state is a significant destination for tourism, especially for nature enthusiasts and trekkers.

Additional Information

• Himachal Pradesh
• Himachal Pradesh is located in northern India and shares its border with China (Tibet) to the east.
• However, it does not share its borders with Nepal or Bhutan.
• The state is known for its Himalayan landscapes, hill stations, and temples.

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• Uttarakhand

• Uttarakhand shares its borders with China (Tibet) to the north and Nepal to the east.

• However, it does not share its border with Bhutan.

• The state is famous for its pilgrimage sites like Haridwar and Rishikesh, along with natural beauty and adventure tourism.

• Arunachal Pradesh

• Arunachal Pradesh shares its borders with China to the north and Bhutan to the west.

• However, it does not share its border with Nepal.

• It is known for its tribal culture, biodiversity, and remote beauty.

Q29. Answer: (c) To assist poor rural families in acquiring assets or skills for self-employment

The Correct answer is To assist poor rural families in acquiring assets or skills for self-employment.

Key Points

• The Integrated Rural Development Programme (IRDP) was launched in 1978-79 and extended throughout India by 1980.

• The main aim of the IRDP was to assist poor rural families in improving their standard of living by helping them acquire productive assets or develop self-employment skills.

• This programme was targeted at families living below the poverty line (BPL).

• IRDP combined various central and state government schemes to provide subsidies and bank loans to rural households for activities such as agriculture, animal husbandry, cottage industries, and small businesses.

• The programme focused on creating employment opportunities and promoting sustainable livelihoods in rural areas.

• It was implemented through a network of District Rural Development Agencies (DRDAs).

• The IRDP aimed to integrate different sectors of development, including education, health, and skill development, to provide a comprehensive approach to rural upliftment.

• It was one of the most significant poverty alleviation programmes launched by the Government of India.

Additional Information

• To provide free food to rural families

• This option refers to programmes like the Public Distribution System (PDS) and the Antyodaya Anna Yojana, which aim to provide subsidized or free food to families living below the poverty line.

• While these programmes address food security, they differ from the IRDP, which focuses on asset creation and skill development for self-employment.

• To promote urban employment

• This option is unrelated to the IRDP as the programme specifically targets rural areas.

• Urban employment-related programmes include initiatives like the National Urban Livelihoods Mission (NULM), which focuses on urban poverty alleviation.

• To build schools in villages

• Building schools in villages is a goal often associated with educational schemes like the Sarva Shiksha Abhiyan (SSA).

• While rural education is vital for development, it is not the primary focus of the IRDP.

Q30. Answer: (b) Garbage collection and disposal

The correct answer is Garbage collection and disposal.

Key Points

• Garbage collection and disposal is a critical component of solid waste management infrastructure.

• It involves the collection, segregation, transportation, treatment, and disposal of solid waste generated in households, industries, and commercial establishments.

• This process helps in maintaining cleanliness, public health, and environmental sustainability.

• Garbage collection systems usually involve the use of vehicles, bins, and containers to collect waste from designated areas.

• Proper disposal methods include landfilling, incineration, recycling, composting, and waste-to-energy conversion.

• Effective garbage disposal helps reduce the risk of diseases caused by improper waste management.

• It also contributes to resource conservation by promoting recycling and reuse of waste materials.

• Many countries are adopting advanced technologies such as mechanized waste collection systems, smart bins, and waste segregation systems.

• Government initiatives such as Swachh Bharat Abhiyan in India focus on improving the efficiency of garbage collection and disposal.

Additional Information

• Drainage tanks

• Drainage tanks are used for managing liquid waste, primarily sewage or stormwater, rather than solid waste.

• They are part of sewage management infrastructure, which ensures proper disposal of wastewater and prevents waterlogging or contamination.

• Sewage pipelines

• Sewage pipelines are designed to transport liquid waste, including human excreta and wastewater, to treatment plants or disposal areas.

• These pipelines are integral to urban sanitation systems but are not involved in managing solid waste.

• Electricity transmission lines

• Electricity transmission lines are used to transport electrical energy from power generation plants to distribution networks.

• They play a vital role in energy infrastructure but have no direct connection to solid waste management.

Q31. Answer: (d) Rae Bareli

The correct answer is Rae Bareli.

Key Points

• The Wahabi Movement was an Islamic revivalist movement led by Syed Ahmad Barelvi.

• It originated in Rae Bareli, located in present-day Uttar Pradesh, India.

• The movement was inspired by the teachings of Shah Waliullah and aimed to purify Islam from un-Islamic practices and return to its original principles.

• It emphasized the concepts of monotheism (Tawhid) and the rejection of idolatry (Shirk).

• Syed Ahmad Barelvi declared a jihad against the British colonial rule and their allies, with the ultimate goal of establishing an Islamic state.

• The movement had significant influence in northern India, especially in Bihar, Bengal, and the North-West Frontier Province.

• It also played a role in uniting people against the colonial powers, which indirectly contributed to the freedom struggle.

Additional Information

• Hyderabad

• Hyderabad is a historic city in the southern state of Telangana, India.

• It has been a center of culture and history, known for landmarks like the Charminar and the Golconda Fort.

• It was the seat of the Nizams of Hyderabad, who were prominent rulers during the British colonial period.

• However, Hyderabad is not associated with the origins of the Wahabi Movement.

• Amritsar

• Amritsar is a city in the state of Punjab and a prominent center of Sikhism.

• It is known for the Golden Temple, the most sacred site in Sikhism, and its rich cultural heritage.

• Amritsar has no direct connection to the Wahabi Movement.

• Jhansi

• Jhansi is a historic city in Uttar Pradesh, famous for its association with Rani Lakshmibai, one of the leading figures in the Indian Rebellion of 1857.

• It is known for the Jhansi Fort and its role in India’s struggle for independence.

• However, Jhansi is not linked to the Wahabi Movement, as it was associated with a different historical context.

Q32. Answer: (c) 104th Amendment

The correct answer is 104th Amendment.

Key Points

• The 104th Constitutional Amendment Act of India was passed in the year 2020.

• This amendment extended the provision of reservation for Scheduled Castes (SCs) and Scheduled Tribes (STs) in the Lok Sabha and State Legislative Assemblies for another 10 years, until 2030.

• Initially, the reservation for SCs and STs in legislatures was provided for a period of 10 years after the commencement of the Indian Constitution in 1950.

• The reservation has been extended every 10 years through various Constitutional Amendment Acts to ensure the representation of SCs and STs in legislatures.

• The 104th Amendment Act also abolished the provision for the nomination of two members from the Anglo-Indian community to the Lok Sabha and State Legislative Assemblies.

• This amendment highlights India's commitment to empowering marginalized communities and ensuring their representation in the democratic process.

• The reservation policy seeks to address historical social inequalities and provide political opportunities to SCs and STs.

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Additional Information

• 105th Amendment

• The 105th Constitutional Amendment Act was passed in 2021.

• It restored the power of the states to identify and notify Socially and Educationally Backward Classes (SEBCs).

• This amendment clarified the role of states in defining SEBCs after the Supreme Court's judgment in the Maratha reservation case.

• 101st Amendment

• The 101st Constitutional Amendment Act introduced the Goods and Services Tax (GST) in India.

• It was passed in 2016 and unified indirect taxes under a single framework.

• This amendment established the GST Council to make recommendations on the implementation of GST.

• 103rd Amendment

• The 103rd Constitutional Amendment Act was passed in 2019.

• It introduced a provision for 10% reservation for Economically Weaker Sections (EWS) in educational institutions and government jobs.

• This amendment added Articles 15(6) and 16(6) to the Indian Constitution.

Q33. Answer: (d) The Indian Ports Act, 1908

The correct answer is The Indian Ports Act, 1908.

Key Points

• The Indian Ports Bill, 2025 seeks to repeal the Indian Ports Act, 1908, which has been in effect for over a century.

• The new Bill aims to bring comprehensive reforms to the port governance framework in India.

• The Indian Ports Act, 1908 was designed during colonial times and does not adequately address the modern-day requirements of the port sector.

• The Bill focuses on ensuring a more integrated and effective approach to port development, operation, and management.

• It seeks to promote the concept of sustainable development, ensuring environmental protection alongside port infrastructure growth.

• The Indian Ports Bill, 2025, also aims to improve coordination among various stakeholders, such as state governments and port authorities.

• It introduces measures for streamlining regulatory oversight and enhancing transparency in port operations.

• The Indian Ports are critical for India's trade and economic growth, as they handle a significant percentage of the country's cargo movement.

• The new legislation aligns with India's national infrastructure and maritime policy goals.

Additional Information

• The Indian Bills of Lading Act, 1856

• The Indian Bills of Lading Act, 1856 governs the legal framework for bills of lading in India.

• A bill of lading serves as a receipt of goods shipped and a document of title.

• This Act primarily deals with the rights and liabilities of parties involved in the transport of goods by sea.

• The Major Port Authorities Act, 2021

• The Major Port Authorities Act, 2021 replaced the Major Port Trusts Act, 1963.

• It aims to provide greater autonomy to major ports in decision-making and operations.

• The Act allows ports to use their funds for development activities without government approvals.

• The Calcutta Port (Pilotage) Act, 1948

• The Calcutta Port (Pilotage) Act, 1948 governs pilotage services at the Calcutta Port.

• Pilotage involves providing navigation assistance to ships for safe movement within a port area.

• This Act is specific to the operational requirements of the Calcutta Port and does not have nationwide applicability.

Q34. Answer: (c) Powers and responsibilities of Panchayats

The correct answer is Powers and responsibilities of Panchayats.

Key Points

• The Eleventh Schedule of the Indian Constitution was added by the 73rd Constitutional Amendment Act, 1992.

• This schedule contains 29 subjects related to the functions and responsibilities of Panchayati Raj Institutions (PRIs).

• It aims to promote the decentralization of power by assigning specific duties to Panchayats.

• Some of the subjects under the Eleventh Schedule include agriculture, rural development, health and sanitation, drinking water,

education, social welfare, and public distribution systems.

• The schedule empowers Panchayats to work for the economic development and social justice of their respective areas.

• Panchayati Raj Institutions function under the Gram Sabha, which is the primary body of local governance.

• Article 243G of the Indian Constitution provides the framework for the implementation of the subjects listed in the Eleventh Schedule.

Additional Information

• Functions of municipalities

• The Twelfth Schedule of the Indian Constitution pertains to the functions assigned to municipalities.

• This schedule was added by the 74th Constitutional Amendment Act, 1992 and includes 18 subjects such as urban planning, public health, water supply, and urban poverty alleviation.

• State list subjects

• The State List is one of the three lists provided in the Seventh Schedule of the Indian Constitution.

• It enumerates subjects on which state governments have exclusive legislative powers, such as police, public health, agriculture, and state-level taxes.

• Anti-defection law

• The Anti-defection law is governed by the Tenth Schedule of the Indian Constitution.

• It was added by the 52nd Constitutional Amendment Act, 1985 to prevent elected members from switching parties after elections.

• The law aims to ensure the stability of governments by discouraging political defections caused by personal or monetary gains.

Q35. Answer: (d) selling government shares in public sector enterprises

The Correct answer is selling government shares in public sector enterprises.

Key Points

• Privatisation was a key component of the 1991 Economic Reforms in India.

• It primarily involved reducing government control in public sector enterprises and encouraging private sector participation.

• Selling government shares in public sector enterprises was a significant step under privatisation to increase efficiency and reduce the financial burden on the government.

• This process is known as disinvestment, where the government sells its stakes in public enterprises, either partially or fully.

• The motive behind privatisation was to enhance competitiveness, profitability, and efficiency of industries by introducing private ownership and management.

• Privatisation also aimed to promote foreign investment and reduce the role of the government in non-strategic sectors.

• Major sectors impacted by privatisation included banking, insurance, telecom, and manufacturing.

• Post-1991, the government focused on strengthening the role of the private sector in economic growth and reducing dependency on public sector enterprises for revenue generation.

Additional Information

• Increasing agricultural subsidies

• Agricultural subsidies involve financial support provided by the government to reduce the cost of inputs such as fertilizers, seeds, and irrigation for farmers.

• While agricultural subsidies were part of several government schemes, they were not a focus of the 1991 Economic Reforms.

• The reforms were more focused on sectors like industry, trade, and finance.

• Reducing bank interest rates

• Bank interest rates are regulated by the Reserve Bank of India (RBI).

• The reduction of interest rates can be a monetary policy tool but was not directly tied to the privatisation measures under the 1991 reforms.

• Nationalising private companies

• Nationalisation refers to the government taking ownership and control of private companies.

• It is the opposite of privatisation, as privatisation involves transferring ownership from the public sector to the private sector.

• The 1991 reforms aimed to reduce nationalisation rather than expand it.

Q36. Answer: (a) chlorofluorocarbons

The Correct answer is chlorofluorocarbons.

Key Points

• The Montreal Protocol was adopted in 1987 and is an international treaty designed to protect the ozone layer.

• Its primary goal is to phase out the production and consumption of ozone-depleting substances (ODS), particularly

chlorofluorocarbons (CFCs).

• Chlorofluorocarbons (CFCs) are compounds containing carbon, chlorine, and fluorine, and they are commonly used in refrigeration, air conditioning, and aerosol sprays.

• CFCs release chlorine atoms into the atmosphere, which react with ozone molecules, leading to the depletion of the ozone layer.

• The depletion of the ozone layer causes harmful ultraviolet (UV) radiation to reach the Earth's surface, leading to various health and environmental issues such as skin cancer, cataracts, and damage to ecosystems.

• The Montreal Protocol is considered one of the most successful international environmental agreements, as it has significantly reduced the use of CFCs globally.

• The treaty has been ratified by almost all countries and has led to the recovery of the ozone layer, which is expected to return to its pre-1980 levels by the middle of the 21st century.

Additional Information

• Carbon dioxide

• Carbon dioxide (CO_2) is a greenhouse gas that contributes to global warming and climate change.

• It is primarily emitted through the burning of fossil fuels, deforestation, and industrial processes.

• Although CO_2 is not directly responsible for ozone depletion, its increasing concentration in the atmosphere is linked to adverse climate effects.

• Methane

• Methane (CH_4) is another potent greenhouse gas that contributes to global warming.

• It is released through activities such as agriculture (e.g., livestock farming), the decay of organic matter, and the extraction of natural gas.

• While methane does not deplete the ozone layer, it has a significant impact on climate change.

• Sulphur dioxide

• Sulphur dioxide (SO_2) is primarily produced through the burning of coal and oil, as well as volcanic eruptions.

• SO_2 contributes to the formation of acid rain, which can damage ecosystems, buildings, and human health.

• Unlike CFCs, SO_2 does not play a direct role in ozone depletion but has environmental impacts in other ways.

Q37. Answer: (d) Defence Research and Development Organisation

The correct answer is Defence Research and Development Organisation (DRDO).

Key Points

• The Defence Research and Development Organisation (DRDO) is India’s premier research and development organization under the Ministry of Defence.

• It is responsible for designing and developing advanced defence technologies for the Indian Armed Forces.

• In collaboration with the Indian Navy, the DRDO developed and successfully tested the Vertical Launch Short Range Surface-to-Air Missile (VLSRSAM) in March 2025.

• The VLSRSAM is a highly advanced missile system designed to counter aerial threats, including fighter aircraft, helicopters, and UAVs.

• This missile is equipped with modern technologies like active radar homing and has been specifically tailored for deployment on naval platforms.

• The collaboration reflects the synergy between the Indian Navy and DRDO for enhancing India’s indigenous defence capabilities.

• DRDO operates through a network of more than 50 laboratories across India, focusing on various defence technologies.

Additional Information

• Hindustan Aeronautics Limited (HAL)

• HAL is a government-owned aerospace and defence company headquartered in Bangalore, India.

• It is primarily involved in the design, development, and production of aircraft, helicopters, and associated systems for military and civilian use.

• HAL has played a crucial role in manufacturing aircraft like the Tejas Light Combat Aircraft and various other helicopters.

• Bharat Electronics Limited (BEL)

• BEL is an Indian state-owned electronics company headquartered in Bangalore, India.

• It specializes in manufacturing advanced electronic products for the defence sector, including radars, communication systems, and electronic warfare equipment.

• BEL collaborates closely with DRDO and other organizations for defence-related technology development.

• Bhabha Atomic Research Centre (BARC)

• BARC is India’s premier nuclear research facility, headquartered in Mumbai, Maharashtra.

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• It focuses on nuclear energy, research, and technology, contributing significantly to India's civilian nuclear program.

• BARC is not directly involved in defence missile systems but plays a critical role in nuclear research and development.

Q38. Answer: (a) Only scarce or vital resources justify state takeover

The Correct answer is Only scarce or vital resources justify state takeover.

Key Points

• The Supreme Court highlighted that the principle of state takeover applies only to resources that are scarce or vital for public interest.

• This decision reinforces the idea that state intervention in private property must be well-justified and limited to cases where it is necessary for public welfare.

• The judgment is significant as it places a limit on the state's authority over private property, safeguarding individual rights.

• It aligns with the constitutional provisions in India, particularly Article 300A, which ensures that private property can only be acquired under the authority of law.

• By emphasizing this principle, the Supreme Court aims to prevent misuse of power and protect the rights of property owners.

• It also reflects the judiciary's commitment to upholding the rule of law in cases related to property rights and acquisition.

Additional Information

• Public trust doctrine applies to all private assets

• This doctrine suggests that certain resources are preserved for public use and the government must protect and maintain them. However, it does not apply to all private assets, but to resources like water bodies, forests, and other natural assets.

• In the context of the case, the application of this doctrine to all private assets would have been deemed overarching and unjustified.

• State can acquire all private properties at will

• This option is incorrect because it contradicts the Indian Constitution's principles, particularly Article 300A, which ensures that private property can only be acquired by the state under legal authority.

• Such unrestricted acquisition would lead to potential misuse of power and infringe upon individual rights.

• Government power overrides individual property rights

• This option undermines the balance between government authority and private rights as established in the Constitution of India.

• While the government has the right to acquire property for public purposes, it must adhere to legal procedures and ensure fair compensation.

Q39. Answer: (b) Kishori Shakti Yojana

The Correct answer is Kishori Shakti Yojana.

Key Points

• Kishori Shakti Yojana (KSY) is a scheme launched by the Government of India under the Integrated Child Development Services (ICDS).

• The scheme primarily focuses on empowering adolescent girls between the age group of 11 to 18 years.

• The main aim is to improve the nutritional and health status of adolescent girls and encourage them to complete their education.

• It also seeks to enhance their self-development and empowerment by providing them with life skills and vocational training.

• The scheme emphasizes spreading awareness about health, hygiene, and family welfare among adolescent girls.

• Another key component of the scheme is promoting literacy and skill development among girls.

• The program is implemented through the Anganwadi Centers across India.

• By enabling girls to become self-reliant and confident, the scheme aims to create a foundation for addressing gender disparities in society.

Additional Information

• NRHM (National Rural Health Mission)

• The National Rural Health Mission (NRHM) was launched in 2005 by the Government of India to address the health needs of rural areas.

• It aims to provide accessible, affordable, and quality healthcare to rural populations, with a special focus on vulnerable groups.

• The program emphasizes reducing infant and maternal mortality rates and controlling communicable and non-communicable diseases.

• National Nutrition Mission

• The National Nutrition Mission, also known as POSHAN Abhiyaan, was launched in 2018 by the Ministry of Women and Child Development.

• Its primary goal is to reduce the level of stunting, undernutrition, anemia, and low birth weight in children along with addressing malnutrition among women and adolescent girls.

• The mission uses technology-based real-time monitoring and focuses on convergence among various programs to improve nutritional outcomes.

• Janani Suraksha Yojana (JSY)

• The Janani Suraksha Yojana is a safe motherhood intervention under the NRHM, launched in 2005.

• The scheme aims to reduce maternal and neonatal mortality by promoting institutional delivery among pregnant women.

• It provides cash incentives to pregnant women for delivering in government or accredited private health facilities.

Q40. Answer: (d) Foreign nationals with special privileges

The Correct answer is Foreign nationals with special privileges.

Key Points

• Overseas Citizen of India (OCI) is a special status provided to foreign nationals of Indian origin by the Government of India under Section 7A of the Citizenship Act, 1955.

• OCI status does not grant dual citizenship. Instead, it provides foreign nationals with special privileges such as visa-free travel to India and certain rights to participate in economic and educational activities.

• OCI cardholders are allowed to live and work in India indefinitely without the need for a visa.

• However, they do not have voting rights, cannot hold constitutional posts, or contest elections in India.

• OCI cardholders can own property in India except for agricultural land, plantation property, or a farmhouse.

• This status is primarily aimed at the Indian diaspora to help them stay connected to their roots while residing abroad.

• The scheme was introduced in 2005 and later merged with the Person of Indian Origin (PIO) card scheme in 2015.

Additional Information

• Persons entitled to hold constitutional posts

• Only Indian citizens are eligible to hold constitutional posts such as the President, Vice-President, Prime Minister, or Chief Justice of India.

• OCI holders are foreign nationals and are thus not entitled to hold such posts.

• Indian citizens with voting rights

• OCI cardholders are not Indian citizens, hence they do not have voting rights. Only individuals with Indian citizenship are eligible to vote in elections.

• Dual citizens of India and another country

• India does not allow dual citizenship. It only provides the OCI card as a recognition of a person's Indian origin and to grant certain privileges.

Q41. Answer: (a) −130x + 126

Shortcut Trick

Distribute the outer values into the brackets directly to expand the expression.

=> $4 \times (6/4)x^2 - 4 \times 25x + 4 \times 12 - 6x^2 - 30x + 78$

=> $6x^2 - 100x + 48 - 6x^2 - 30x + 78$

=> $(6 - 6)x^2 - (100 + 30)x + (48 + 78)$

=> $-130x + 126$

Therefore The correct answer is −130x + 126.

Alternate Method

Given:

Expression: $4 \times ((6/4)x^2 - 25x + 12) - 6 \times (x^2 + 5x - 13)$

Concept Used:

Use the distributive property of multiplication over addition and subtraction: $a(b \pm c) = ab \pm ac$

Calculation:

=> $(4 \times (6/4)x^2) - (4 \times 25x) + (4 \times 12) - (6 \times x^2) - (6 \times 5x) - (6 \times -13)$

=> $6x^2 - 100x + 48 - 6x^2 - 30x + 78$

Grouping the like terms together (the x^2 terms, x terms, and constant terms):

=> $(6x^2 - 6x^2) + (-100x - 30x) + (48 + 78)$

=> $0 - 130x + 126$

=> $-130x + 126$

Therefore The correct answer is −130x + 126.

Additional Information

BODMAS Rule

It defines the correct sequence to solve mathematical expressions: Brackets, Order, Division, Multiplication, Addition, and Subtraction.

Distributive Property

The distributive property states that multiplying a sum by a number is the same as multiplying each addend by the number and then adding the products: a(b + c) = ab + ac.

Like Terms

Terms whose variables and their exponents are exactly the same are called like terms. Only like terms can be added or subtracted from each other to simplify algebraic expressions.

Q42. Answer: (c) 5

Shortcut Trick

The fastest way to check divisibility is by looking at the last digit.

The given number is 386937355, which ends in the digit 5.

According to the divisibility rule of 5, any number ending in 0 or 5 is exactly divisible by 5.

Since the last digit is 5, the entire number is directly divisible by 5.

Therefore The correct answer is 5.

Alternate Method

Given:

The number to be divided is 386937355.

Method Used:

We will apply the divisibility rules for each given option to find the correct divisor.

Calculations:

=> Option 1 (Divisibility by 3): A number is divisible by 3 if the sum of its digits is a multiple of 3.

=> Sum of digits = 3 + 8 + 6 + 9 + 3 + 7 + 3 + 5 + 5 = 49.

=> Since 49 is not divisible by 3, the given number is not divisible by 3.

=> Option 2 (Divisibility by 15): A number must be divisible by both 3 and 5 to be divisible by 15.

=> Since the number fails the divisibility test for 3, it is not divisible by 15.

=> Option 4 (Divisibility by 14): A number must be even to be divisible by an even number like 14.

=> The given number ends in 5, making it an odd number. Hence, it is not divisible by 14.

=> Option 3 (Divisibility by 5): A number is divisible by 5 if its last digit is either 0 or 5.

=> The last digit of 386937355 is 5, which satisfies the condition.

Therefore The correct answer is 5.

Additional Information

Divisibility Rule of 3 & 9

A number is divisible by 3 or 9 if the sum of all its digits is divisible by 3 or 9 respectively.

Divisibility Rule of 4 & 8

A number is divisible by 4 if its last two digits form a number divisible by 4. It is divisible by 8 if its last three digits form a number divisible by 8.

Divisibility Rule of 11

A number is divisible by 11 if the difference between the sum of digits at odd places and the sum of digits at even places is 0 or a multiple of 11.

Divisibility Rule of Composite Numbers

To check divisibility by a composite number (like 12 or 15), check divisibility by its co-prime factors (e.g., 3 and 4 for 12; 3 and 5 for 15).

Q43. Answer: (d) Rs. 11,85,000

Shortcut Trick

M's profit = (6705 + 745) ÷ 2 = Rs. 3,725 and N's profit = 6705 − 3725 = Rs. 2,980.

Profit ratio of M : N = 3725 : 2980 = 5 : 4.

Investment ratio M : N = (Profit M ÷ Time M) : (Profit N ÷ Time N) = (5 ÷ 7) : (4 ÷ 6) = 15 : 14.

Difference in investment = 15 − 14 = 1 unit → Rs. 79,000.

Capital contributed by M = 15 units = 15 × 79000 = Rs. 11,85,000.

Therefore The correct answer is Rs. 11,85,000.

Alternate Method

Given:

Total profit = Rs. 6,705

M's profit − N's profit = Rs. 745

Time period of M = 7 months, Time period of N = 6 months.

Partner M

Capital: x + 79,000

Time: 7 months

Partner N

Capital: x

Time: 6 months

Profit Ratio (M : N) = 5 : 4

Formula Used:

Profit Ratio = Ratio of (Investment × Time)

Calculations:

=> M's profit = (6705 + 745) ÷ 2 = Rs. 3,725

=> N's profit = 6705 − 3725 = Rs. 2,980

=> Profit Ratio (M : N) = 3725 : 2980 = 5 : 4

=> Let N's capital be x, then M's capital = x + 79000

=> ((x + 79000) × 7) ÷ (x × 6) = 5 ÷ 4

=> (x + 79000) ÷ x = (5 × 6) ÷ (4 × 7)

=> (x + 79000) ÷ x = 30 ÷ 28 = 15 ÷ 14

=> 15x = 14(x + 79000)

=> 15x = 14x + 1106000

=> x = Rs. 11,06,000

=> M's Capital = x + 79000 = 1106000 + 79000 = Rs. 11,85,000

Therefore The correct answer is Rs. 11,85,000.

Additional Information

Partnership Profit Ratio

The profit earned in a partnership is distributed in the ratio of the product of capital invested and the time period of investment. Profit Ratio = C1×T1 : C2×T2.

Active vs Sleeping Partner

An active partner receives a fixed percentage or salary from the total profit for managing the business, and the remaining profit is divided according to capital ratios.

Mid-way Join or Withdraw

If a partner adds or withdraws capital mid-way, their total effective capital is the sum of (capital × duration) for each respective period within the total time.

Q44. Answer: (a) 31

Shortcut Trick

Solve the inner brackets mentally: (5 − 4) = 1

Multiply: 2 × 1 = 2

Add to 20: 20 + 2 = 22

Divide the final sum: 682 ÷ 22 = 31

Therefore The correct answer is 31.

Alternate Method

Given:

[682 ÷ {20 + 2 × (5 − 4)}]

Method Used:

BODMAS Rule: First solve Brackets (), then {}, then []. Next apply Of, Division, Multiplication, Addition, and Subtraction respectively.

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Calculation:

=> [682 ÷ {20 + 2 × (5 − 4)}]

=> [682 ÷ {20 + 2 × 1}]

=> [682 ÷ {20 + 2}]

=> [682 ÷ 22]

=> 31

Therefore The correct answer is 31.

Additional Information

BODMAS Rule

It dictates the order of mathematical operations: Brackets, Orders (powers/roots), Division, Multiplication, Addition, and Subtraction. Brackets are solved in the order: () round, {} curly, [] square.

VBODMAS Extension

The V stands for Vinculum (bar over an expression). Any expression under a Vinculum is evaluated first before applying the standard BODMAS sequence.

Important Property

When simplifying equations, always perform multiplication and division from left to right, followed by addition and subtraction from left to right to ensure an accurate result.

Q45. Answer: (d) 50%

Shortcut Trick

Shopkeeper gives 16 books but charges for 15 with an additional 4% discount on Marked Price.

Effective SP / MP ratio = (15 × 0.96) / 16 = 14.4 / 16 = 90 / 100 => 10% effective discount.

Using direct formula: CP / MP = (100 − D%) / (100 + P%)

=> CP / MP = (100 − 10) / (100 + 35) = 90 / 135 = 2 / 3

=> Percentage by which MP is higher than CP = [(3 − 2) / 2] × 100% = 50%.

Therefore The correct answer is 50%.

Alternate Method

CP100MP150Paid SP144Eff. SP135+50%-4%× 15/16Overall Gain = +35%1 Free book on 15 means customer gets 16 books but pays for 15.Hence, Effective SP per book = Paid SP × (15 / 16)

Given:

Discount given on Marked Price = 4%

Offer = 1 book free on the purchase of every 15 books (Customer pays for 15 but receives 16)

Overall Profit Gained = 35%

Calculations:

=> Let the Cost Price (CP) of 1 book be Rs. 100.

=> Total Cost Price for 16 books given to the customer = 16 × 100 = Rs. 1600.

=> The seller gains a 35% profit on the total cost incurred.

=> Total Selling Price (SP) for 16 books = 1600 × (100 + 35) / 100 = Rs. 2160.

=> Since the customer pays for only 15 books, the discounted SP of 1 book = 2160 ÷ 15 = Rs. 144.

=> This SP was arrived at after allowing a 4% discount on the Marked Price (MP).

=> So, 96% of MP = 144

=> MP = 144 × (100 / 96) = Rs. 150.

=> Difference between Marked Price and Cost Price = 150 − 100 = Rs. 50.

=> Percentage by which MP is higher than CP = (50 / 100) × 100% = 50%.

Therefore The correct answer is 50%.

Additional Information

Buy X Get Y Free Offer

When a shopkeeper offers 'Buy X Get Y Free', the customer gets a total of (X + Y) items while paying for only X items. The effective discount percentage due to this scheme is [Y / (X + Y)] × 100%.

Direct Relation between CP and MP

A very useful shortcut formula to directly find the ratio of Cost Price to Marked Price when Profit (P%) and Discount (D%) are known is: CP / MP = (100 − D%) / (100 + P%).

Markup Percentage

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Markup is the amount added to the Cost Price to arrive at the Marked Price. It is always calculated over the Cost Price: Markup % = [(MP − CP) / CP] × 100%. Alternatively, Discount is always calculated over the Marked Price.

Q46. Answer: (b) Rs. 136.60

Shortcut Trick

Total Cost Price (CP) for 83 mirrors = Rs. 83.

Number of mirrors available for sale = 83 − 22 = 61 mirrors.

Total Selling Price (SP) = 61 × 3.60 = Rs. 219.60.

Profit = SP − CP = 219.60 − 83 = Rs. 136.60.

Therefore The correct answer is Rs. 136.60.

Alternate Method

Given:

Total mirrors purchased = 83

Total Cost Price (CP) = Rs. 83

Mirrors broken in transit = 22

Selling Price (SP) of each remaining mirror = Rs. 3.60

Formula Used:

Profit = Total SP − Total CP

Total Mirrors = 83, Broken = 22 → Remaining = 61

SP per remaining mirror = Rs. 3.60

CP = Rs. 83

SP = Rs. 219.60

Profit = Rs. 136.60

Profit = SP − CP = 219.60 − 83 = Rs. 136.60

Calculations:

=> Number of remaining mirrors = 83 − 22 = 61

=> Total Selling Price (SP) = Remaining mirrors × SP per mirror

=> Total SP = 61 × 3.60

=> Total SP = Rs. 219.60

=> Profit = Total SP − Total CP

=> Profit = 219.60 − 83

=> Profit = Rs. 136.60

Therefore The correct answer is Rs. 136.60.

Additional Information

Profit and Loss Percentages

Profit % = (Profit ÷ CP) × 100, where Profit = SP − CP. Loss % = (Loss ÷ CP) × 100, where Loss = CP − SP.

Marked Price and Discount

Discount is always calculated on Marked Price (MP). SP = MP − Discount. Discount % = (Discount ÷ MP) × 100.

Successive Discounts

If two successive discounts of a% and b% are given, then the single equivalent discount % is [a + b − (a × b ÷ 100)]%.

Q47. Answer: (d) 59%

Shortcut Trick

Total population is 362000 and males are 181000, so females = 181000.

Ratio of Males : Females = 1 : 1.

Let female literacy be x%.

Using weighted average: (35% × 1 + x% × 1) ÷ 2 = 47%

=> 35 + x = 94 => x = 59%.

Therefore The correct answer is 59%.

Alternate Method

Given:

Total population = 362000

Total males = 181000

Formula Used:

Percentage = (Part value ÷ Total value) × 100

Males

35%

Females

x%

Total

47%

Ratio: 1

Ratio: 1

x − 47 = 47 − 35 = 12 => x = 59%

Calculations:

=> Number of females = Total population − Total males

=> Number of females = 362000 − 181000 = 181000

=> Total literate population = 47% of 362000 = (47 ÷ 100) × 362000 = 170140

=> Literate males = 35% of 181000 = (35 ÷ 100) × 181000 = 63350

=> Literate females = Total literate − Literate males

=> Literate females = 170140 − 63350 = 106790

=> Percentage of literate females = (106790 ÷ 181000) × 100

=> Percentage of literate females = 59%

Therefore The correct answer is 59%.

Additional Information

Weighted Average Method

Used when two or more groups are combined. If group 1 has average A1 and weight W1, and group 2 has average A2 and weight W2, then the combined average A = (A1W1 + A2W2) ÷ (W1 + W2).

Rule of Alligation

It helps to find the ratio in which two quantities must be mixed to produce a mixture of a given mean value. Ratio = (Dearer value − Mean value) : (Mean value − Cheaper value).

Base of Percentage

When calculating percentage of a specific group, the base should always be the total count of that specific group, not the overall population. Required % = (Specific value ÷ Group total) × 100.

Q48. Answer: (d) 32.73

Shortcut Trick

Assume the base average for all 33 matches is 40.

Deviation for the next 10 matches = 16 − 40 = −24 per match.

Total deviation = 10 × −24 = −240.

Change in overall average = −240 ÷ 33 = −7.2727... ≈ −7.27.

New combined average = 40 − 7.27 = 32.73.

Therefore The correct answer is 32.73 runs.

Alternate Method

Given:

Average runs for the first 23 matches = 40

Average runs for the next 10 matches = 16

Formula Used:

Combined Average = (Sum of all observations) ÷ (Total number of observations)

23 matches

Average = 40

10 matches

Average = 16

Combined 33 matches | Average = 32.73

Calculations:

=> Total runs in the first 23 matches = 23 × 40 = 920

=> Total runs in the next 10 matches = 10 × 16 = 160

=> Total runs in all 33 matches = 920 + 160 = 1080

=> Combined Average = 1080 ÷ 33 = 360 ÷ 11

=> Combined Average = 32.7272... ≈ 32.73

Therefore The correct answer is 32.73 runs.

Additional Information

Weighted Average

When dealing with groups of different sizes, the combined average is calculated as A_w = (n1A1 + n2A2) ÷ (n1 + n2).

Net Deviation Method

Instead of multiplying large numbers, assume a base average and calculate the net deviation. True Average = Assumed Average + (Net Deviation ÷ Total Count). This makes calculations significantly faster.

Q49. Answer: (c) 3,195

Shortcut Trick

Average of the ratio parts = (3 + 5 + 7) ÷ 3 = 15 ÷ 3 = 5 parts.

Given the average price is Rs. 5,325, this corresponds directly to the average of the ratio parts.

Value of 1 part = 5,325 ÷ 5 = Rs. 1,065.

Price of the cheapest item (3 parts) = 3 × 1,065 = Rs. 3,195.

Therefore The correct answer is Rs. 3,195.

Alternate Method

Given:

Average price of 3 items = Rs. 5,325

Ratio of their prices = 3 : 5 : 7

Formula Used:

Total value = Average × Number of items

Average (5 parts) = Rs. 5,325

3 parts

5 parts

7 parts

Cheapest

Middle

Expensive

Cheapest item (3 parts) = 3 × Rs. 1,065 = Rs. 3,195

Calculations:

=> Let the prices of the three items be 3x, 5x, and 7x.

=> Total price of the three items = 3 × 5,325 = Rs. 15,975

=> Sum of the prices = 3x + 5x + 7x = 15x

=> 15x = 15,975

=> x = 15,975 ÷ 15

=> x = 1,065

=> Price of the cheapest item = 3x

=> Cheapest item = 3 × 1,065 = Rs. 3,195

Therefore The correct answer is Rs. 3,195.

Additional Information

Ratio and Arithmetic Progression

When terms in a ratio are in an Arithmetic Progression (like 3, 5, 7 with a common difference of 2), their average is always directly equal to the middle term. Here, the average ratio directly equals 5 parts.

Value of One Part

In ratio problems, finding the value of '1 part' simplifies the calculation drastically. It can be found by dividing the total value by the total ratio parts or the average value by the average ratio parts.

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Divisibility Check Trick

Since the cheapest item corresponds to 3 parts, the correct answer must be a multiple of 3. You can verify this by checking if the sum of the digits is divisible by 3 (3 + 1 + 9 + 5 = 18, which is divisible by 3).

Q50. Answer: (c) sin θ

Shortcut Trick

Let θ = 30°, then sec 30° + tan 30° = 2/√3 + 1/√3 = 3/√3 = √3.

Given s = sec θ + tan θ, so s = √3 => $s^2 = 3$.

Substitute $s^2 = 3$ in the given expression: $(s^2 - 1) / (s^2 + 1)$.

=> (3 − 1) / (3 + 1) = 2 / 4 = 1/2.

Check the given options for θ = 30°: Option 3 gives sin 30° = 1/2, which matches perfectly.

Therefore The correct answer is sin θ.

Alternate Method

Given:

sec θ + tan θ = s

Formula Used:

$\sec^2 \theta - \tan^2 \theta = 1$

Calculations:

=> (sec θ − tan θ)(sec θ + tan θ) = 1

=> sec θ − tan θ = 1/s

Subtracting (sec θ − tan θ = 1/s) from (sec θ + tan θ = s):

=> $2 \tan \theta = s - 1/s = (s^2 - 1) / s$

=> $\tan \theta = (s^2 - 1) / 2s$

θ

Base = 2s

Perp = $s^2 - 1$

Hypotenuse = $s^2 + 1$

In a right-angled triangle, if tan θ = Perpendicular / Base = $(s^2 - 1) / 2s$:

=> Perpendicular = $s^2 - 1$

=> Base = 2s

=> Hypotenuse = $\sqrt{[(s^2 - 1)^2 + (2s)^2]}$

=> Hypotenuse = $\sqrt{[s^4 - 2s^2 + 1 + 4s^2]}$

=> Hypotenuse = $\sqrt{[s^4 + 2s^2 + 1]} = s^2 + 1$

We need to find the value of $(s^2 - 1) / (s^2 + 1)$:

=> $(s^2 - 1) / (s^2 + 1)$ = Perpendicular / Hypotenuse

=> Perpendicular / Hypotenuse = sin θ

Therefore The correct answer is sin θ.

Additional Information

Fundamental Trigonometric Identities

The three core identities are: $\sin^2 \theta + \cos^2 \theta = 1$, $\sec^2 \theta - \tan^2 \theta = 1$, and $\text{cosec}^2 \theta - \cot^2 \theta = 1$.

Inverse Relation of Secant and Tangent

Since $\sec^2 \theta - \tan^2 \theta = 1$, we can write (sec θ − tan θ)(sec θ + tan θ) = 1. Thus, if sec θ + tan θ = x, then sec θ − tan θ = 1/x.

Algebraic Pythagorean Triplets

For any real number s > 1, the values 2s, $s^2 - 1$, and $s^2 + 1$ always form the sides of a right-angled triangle, where $s^2 + 1$ represents the hypotenuse.

Q51. Answer: (a) 9

Shortcut Trick

For any trapezium, the length of the line segment joining the midpoints of its diagonals is directly equal to half the difference of the parallel sides.

The non-parallel sides (AD and BC) are given only to confuse and are not needed for this calculation.

Given parallel sides are AB = 12 cm and DC = 30 cm.

EF = (DC − AB) / 2

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EF = (30 − 12) / 2 = 18 / 2 = 9 cm.

Therefore The correct answer is 9 cm.

Alternate Method

Given:

A quadrilateral ABCD where AB || DC (which makes it a Trapezium).

Parallel sides: AB = 12 cm, DC = 30 cm.

Non-parallel sides: AD = 45 cm, BC = 40 cm.

E and F are the midpoints of the diagonals AC and BD respectively.

A

B

D

C

E

F

12 cm

30 cm

45 cm

40 cm

EF = ?

Formula Used:

Length of the line segment joining the midpoints of the diagonals of a trapezium = 1/2 × (Difference of parallel sides).

Calculations:

=> Parallel sides are AB and DC, so the formula is applied directly to them.

=> EF = 1/2 × (DC − AB)

=> EF = 1/2 × (30 − 12)

=> EF = 1/2 × 18

=> EF = 9 cm

Therefore The correct answer is 9 cm.

Additional Information

Midsegment of a Trapezium

The line segment joining the midpoints of the non-parallel sides is parallel to the bases, and its length is the exact average of the bases: 1/2 × (AB + DC).

Intersection of Diagonals

The diagonals of a trapezium intersect each other proportionally in the ratio of the parallel sides. If diagonals AC and BD intersect at point O, then AO / OC = BO / OD = AB / DC.

Area of a Trapezium

The area is calculated as: Area = 1/2 × (Sum of parallel sides) × (Perpendicular height between them).

Q52. Answer: (b) 630

Shortcut Trick

Check if the given sides form a Pythagorean triplet: $28^2 + 45^2 = 784 + 2025 = 2809$.

Since $53^2 = 2809$, the sides 28 cm, 45 cm, and 53 cm form a right-angled triangle.

For a right-angled triangle, Area = (1 ÷ 2) × Base × Perpendicular.

Area = (1 ÷ 2) × 28 × 45 = 14 × 45 = 630 cm^2.

Therefore The correct answer is 630 cm^2.

Alternate Method

Given:

Sides of the triangle: a = 28 cm, b = 45 cm, c = 53 cm.

28 cm

45 cm

53 cm

A

B

C

Formula Used:

Heron's Formula: Area = √[s × (s − a) × (s − b) × (s − c)]

Semi-perimeter (s) = (a + b + c) ÷ 2

Calculations:

=> s = (28 + 45 + 53) ÷ 2

=> s = 126 ÷ 2 = 63 cm

=> Area = √[63 × (63 − 28) × (63 − 45) × (63 − 53)]

=> Area = √[63 × 35 × 18 × 10]

=> Area = √[(9 × 7) × (7 × 5) × (9 × 2) × (5 × 2)]

=> Area = √[9^2 × 7^2 × 5^2 × 2^2]

=> Area = 9 × 7 × 5 × 2

=> Area = 630 cm^2

Therefore The correct answer is 630 cm^2.

Additional Information

Heron's Formula

Used to find the area of a scalene triangle when all three sides are known: Area = √[s(s − a)(s − b)(s − c)].

Pythagorean Triplets

Sets of three integers satisfying $a^2 + b^2 = c^2$. Common examples include (3, 4, 5), (5, 12, 13), (7, 24, 25), (8, 15, 17), and (28, 45, 53).

Right-Angled Triangle Properties

The circumradius is half the hypotenuse (R = c ÷ 2). The inradius can be found using the formula r = (a + b − c) ÷ 2.

Q53. Answer: (b) 75.68

Shortcut Trick

Directly calculate the time taken for each segment of the journey using Time = Distance ÷ Speed.

Total Time = 198÷66 + 584÷73 + 656÷82 = 3 + 8 + 8 = 19 hours.

Total Distance = 198 + 584 + 656 = 1438 km.

Average Speed = Total Distance ÷ Total Time = 1438 ÷ 19 = 75.684... km/hr.

Therefore The correct answer is 75.68 km/hr.

Alternate Method

198 km

584 km

656 km

66 km/hr

73 km/hr

82 km/hr

3 hrs

8 hrs

8 hrs

Total Distance = 1438 km

Total Time = 19 hrs

Given:

Distance 1 = 198 km, Speed 1 = 66 km/hr

Distance 2 = 584 km, Speed 2 = 73 km/hr

Distance 3 = 656 km, Speed 3 = 82 km/hr

Formula Used:

Time = Distance ÷ Speed

Average Speed = Total Distance ÷ Total Time

Calculation:

=> Time for 1^(st) part = 198 ÷ 66 = 3 hours

=> Time for 2^(nd) part = 584 ÷ 73 = 8 hours

=> Time for 3^(rd) part = 656 ÷ 82 = 8 hours

=> Total Time = 3 + 8 + 8 = 19 hours

=> Total Distance = 198 + 584 + 656 = 1438 km

=> Average Speed = 1438 ÷ 19

=> Average Speed ≈ 75.684... km/hr

Therefore The correct answer is 75.68 km/hr.

Additional Information

Average Speed (General Formula)

Average Speed is always calculated by taking the sum of all individual distances traveled and dividing it by the total duration of the journey.

Average Speed for Equal Distances

If two exactly equal distances are covered at speeds 'x' and 'y', the overall average speed simplifies to (2 × x × y) ÷ (x + y).

Average Speed for Equal Times

If multiple distances are covered in identical time periods at different speeds, the average speed becomes the simple arithmetic mean of those speeds.

Relative Speed

When two bodies travel towards each other (opposite directions), relative speed = (x + y). When they travel in the same direction, relative speed = (x − y).

Q54. Answer: (c) 6.3

Shortcut Trick

Convert the given decimals to their lowest fractions: 6.3 = 63/10 and 0.07 = 7/100.

LCM of fractions = LCM of numerators ÷ HCF of denominators.

LCM(63, 7) = 63 and HCF(10, 100) = 10.

LCM = 63 ÷ 10 = 6.3.

Therefore The correct answer is 6.3.

Alternate Method

Given:

The numbers are 6.3 and 0.07

Formula Used:

LCM of decimals: Make the number of decimal places equal, remove the decimals to find the LCM of the resulting integers, and place the decimal point back in the result at the exact same position.

Calculation:

=> Make the decimal places equal by adding a zero: 6.30 and 0.07

=> Remove the decimal point to consider them as integers: 630 and 7

=> Find the LCM of 630 and 7.

=> Since 630 is exactly divisible by 7 (630 = 7 × 90), their LCM is 630.

=> Put the decimal point back at two places from the right (as in the equated decimals): 6.30

=> Therefore, the LCM of 6.3 and 0.07 is 6.3.

Therefore The correct answer is 6.3.

Additional Information

HCF of Decimals

Make the decimal places equal, find the HCF of the resulting integers, and place the decimal point back at the same position in the final answer.

LCM of Fractions

LCM = LCM of Numerators ÷ HCF of Denominators (Note: Always convert fractions to their simplest form before applying the formula).

HCF of Fractions

HCF = HCF of Numerators ÷ LCM of Denominators (Note: Always convert fractions to their simplest form before applying the formula).

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Q55. Answer: (a) 33

Shortcut Trick

We know that the product of two numbers = HCF × LCM

Second Number = (11 × 330) ÷ 110

Second Number = 11 × 3 = 33

Therefore The correct answer is 33.

Alternate Method

Given:

HCF = 11

LCM = 330

First Number = 110

Formula Used:

First Number × Second Number = HCF × LCM

Calculations:

=> 110 × Second Number = 11 × 330

=> 110 × Second Number = 3630

=> Second Number = 3630 ÷ 110

=> Second Number = 33

Therefore The correct answer is 33.

Additional Information

Product Rule for Two Numbers

For any two positive integers a and b, the product of the numbers equals the product of their HCF and LCM: a × b = HCF(a, b) × LCM(a, b). Note that this rule strictly applies only to two numbers, not three or more.

Co-prime Numbers

Two numbers are considered co-prime if their highest common factor (HCF) is 1. For such numbers, their least common multiple (LCM) is directly the product of the two numbers.

HCF and LCM of Fractions

HCF = (HCF of Numerators) ÷ (LCM of Denominators)

LCM = (LCM of Numerators) ÷ (HCF of Denominators)

Q56. Answer: (c) 11%

Shortcut Trick

For Compound Interest, the multiplying factor over 2 years is the square of the annual factor.

Ratio of Amount to Principal (A/P) = 12321 / 10000

Annual multiplier = √(12321 / 10000) = 111 / 100

Rate % = ((111 − 100) / 100) × 100% = 11%

Therefore The correct answer is 11%.

Alternate Method

P = Rs. 10,000

A = Rs. 12,321

t = 0

t = 2 years

Rate = R% p.a.

Given:

Principal (P) = Rs. 10,000

Amount (A) = Rs. 12,321

Time (n) = 2 years

Formula Used:

Amount (A) = $P \times (1 + R/100)^n$

Calculations:

=> $12321 = 10000 \times (1 + R/100)^2$

=> $12321 / 10000 = (1 + R/100)^2$

=> √(12321 / 10000) = 1 + R/100

=> 111 / 100 = 1 + R/100

=> R/100 = 111/100 − 1

=> R/100 = 11 / 100

=> R = 11%

Therefore The correct answer is 11%.

Additional Information

CI vs SI Difference Formula

For 2 years, the difference between CI and SI is given by: $D = P \times (R/100)^2$. For 3 years, $D = P \times (R/100)^2 \times (3 + R/100)$.

Half-Yearly Compounding

If the interest is compounded half-yearly, the Rate becomes R/2 and the Time period becomes 2n.

Effective Rate for 2 Years

The effective compound interest rate for 2 years at R% p.a. can be calculated directly as: $(2R + R^2/100)\%$.

Q57. Answer: (b) 30.75

Shortcut Trick

Using Percentage Interchangeability: 65% of 75 = 75% of 65

=> 3/4 × 65 = 195 / 4 = 48.75

Calculate fraction part directly: 2/5 of 45 = 2 × 9 = 18

Difference = 48.75 − 18 = 30.75

Therefore The correct answer is 30.75.

Alternate Method

Given:

First value = 65% of 75

Second value = 2/5 of 45

Calculations:

Evaluate the first value:

=> First value = (65 / 100) × 75

=> First value = (13 / 20) × 75

=> First value = (13 × 15) / 4

=> First value = 195 / 4 = 48.75

Evaluate the second value:

=> Second value = (2 / 5) × 45

=> Second value = 2 × 9 = 18

Calculate the required difference between the two values:

=> Required Difference = First value − Second value

=> Required Difference = 48.75 − 18

=> Required Difference = 30.75

Therefore The correct answer is 30.75.

Additional Information

Percentage Interchangeability

A very useful trick for faster mathematical calculations is x% of y = y% of x. For example, computing 75% of 65 is easier because 75% directly simplifies to the fraction 3/4.

Fraction to Percentage Conversion

Fractions can be easily converted to percentages by multiplying the fraction by 100. For instance, the fraction 2/5 is equivalent to (2/5) × 100% = 40%.

BODMAS Rule

Always follow the proper order of arithmetic operations to avoid errors: Brackets, Orders (powers and roots), Division and Multiplication (left to right), and Addition and Subtraction (left to right).

Q58. Answer: (a) Rs. 88

Shortcut Trick

Let pen cost = x and pencil cost = y. The first condition gives 6x + 19y = 275.

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After the price changes, 15(x − 7) + 4(y + 7) = 132, which simplifies to 15x + 4y = 209.

Multiply the first equation by 5 and the second by 2 to balance coefficients of x.

We get 30x + 95y = 1375 and 30x + 8y = 418. Subtracting them yields 87y = 957 => y = 11.

Substituting y = 11 in the first equation gives x = 11. Cost of 6 pens and 2 pencils = 6(11) + 2(11) = 88.

Therefore The correct answer is Rs. 88.

Alternate Method

Given:

Original cost of 6 pens and 19 pencils = Rs. 275

New cost of 15 pens (after Rs. 7 decrease) and 4 pencils (after Rs. 7 increase) = Rs. 132

Calculation:

Let the original cost of 1 pen be Rs. x and 1 pencil be Rs. y.

=> 6x + 19y = 275 --- (Equation 1)

After the given price changes, the new cost of a pen = (x − 7) and new cost of a pencil = (y + 7).

=> 15(x − 7) + 4(y + 7) = 132

=> 15x − 105 + 4y + 28 = 132

=> 15x + 4y − 77 = 132

=> 15x + 4y = 209 --- (Equation 2)

To eliminate x, multiply Equation 1 by 5 and Equation 2 by 2:

=> 30x + 95y = 1375

=> 30x + 8y = 418

Subtracting the modified Equation 2 from the modified Equation 1:

=> 87y = 957

=> y = 957 ÷ 87 = 11

Substitute y = 11 in Equation 1:

=> 6x + 19(11) = 275

=> 6x + 209 = 275

=> 6x = 66

=> x = 11

The original cost of 1 pen is Rs. 11 and 1 pencil is Rs. 11.

Now, calculate the cost of 6 pens and 2 pencils:

=> 6x + 2y = 6(11) + 2(11)

=> 66 + 22 = 88

Therefore The correct answer is Rs. 88.

Additional Information

Linear Equations in Two Variables

An equation of the form ax + by = c is a linear equation. A system of two linear equations can be solved using substitution, elimination, or cross-multiplication methods.

Elimination Method

Multiply both equations by suitable constants so that the coefficients of one variable become mathematically equal, then add or subtract the equations to cleanly eliminate that specific variable.

Q59. Answer: (b) 21025

Shortcut Trick

To find the square of a number ending in 5 (say N5):

The first part of the answer is N × (N + 1) and the last part is always 25.

For 145, N = 14.

First part = 14 × 15 = 210.

Combining both parts gives 21025.

Therefore The correct answer is 21025.

Alternate Method

Given:

The expression is 145^2.

Formula Used:

$(a - b)^2 = a^2 - 2ab + b^2$

Calculation:

=> 145 = 150 − 5

=> $145^2 = (150 - 5)^2$

=> $145^2 = 150^2 - 2 \times 150 \times 5 + 5^2$

=> $145^2 = 22500 - 1500 + 25$

=> $145^2 = 21000 + 25$

=> $145^2 = 21025$

Therefore The correct answer is 21025.

Additional Information

Squares of numbers ending in 5

For a number formed by digits 'a' followed by 5, the square is given by a(a + 1) followed by 25. Example: $85^2 \rightarrow 8 \times 9 = 72$, so 7225.

Algebraic Identities for Squares

$(a + b)^2 = a^2 + 2ab + b^2$ and $(a - b)^2 = a^2 - 2ab + b^2$. These identities are highly useful to square large numbers mentally by breaking them into simpler nearest-base parts.

Base Method for Squaring

To square a number near a base (e.g., 150), find the deviation (d). Using the formula, Square = Base × (Number + d) + d^2. For 145, d = −5, Base = 150. Result = 150 × (145 − 5) + 5^2 = 150 × 140 + 25 = 21000 + 25 = 21025.

Q60. Answer: (c) 19

Shortcut Trick

Let Mother's age = M and Daughter's age = D.

Simplified given equations: M − 2D = 13 and M − 3D = 7.

Subtracting the equations directly gives: D = 6 years.

Substitute D = 6 into the first equation: M = 2(6) + 13 = 25 years.

Difference between their ages = 25 − 6 = 19 years.

Therefore The correct answer is 19 years.

Alternate Method

Given:

2 times the mother's age is 26 years more than 4 times the daughter's age.

3 times the daughter's age is 7 years less than the mother's age.

Mother

25 years

Daughter

6 yrs

Difference = 19 years

Calculations:

Let the mother's age be M and the daughter's age be D.

=> 2M = 4D + 26

=> M = 2D + 13 --- (Equation 1)

=> 3D = M − 7

=> M = 3D + 7 --- (Equation 2)

Equating Equation 1 and Equation 2:

=> 2D + 13 = 3D + 7

=> 3D − 2D = 13 − 7

=> D = 6

Substitute D = 6 in Equation 2:

=> M = 3(6) + 7

=> M = 18 + 7 = 25

Difference in their ages = M − D

=> Difference = 25 − 6 = 19

Therefore The correct answer is 19 years.

Additional Information

Ages & Age Difference

The numerical difference between the ages of two individuals always remains constant over time. If a person is 5 years older than someone today, they will remain 5 years older indefinitely.

Linear Equations with Two Variables

Whenever a word problem provides two unknown variables (like ages of two different people), forming two distinct algebraic equations is necessary to evaluate their exact individual values.

Ratio Multiplier Method

For questions involving specific present and future age ratios, cross-multiplying the initial and final ratio expressions helps in quickly finding the fundamental ratio unit directly without extensive steps.

Q61. Answer: (d) 1,95,265

Shortcut Trick

Let the profit shares be 5 units, 8 units, and 17 units.

Difference between largest and smallest share = 17 − 5 = 12 units.

Given, 12 units = Rs. 78,106.

Total profit = 5 + 8 + 17 = 30 units.

Total profit = Rs. 78,106 × (30 ÷ 12) = Rs. 78,106 × 2.5 = Rs. 1,95,265.

Therefore The correct answer is Rs. 1,95,265.

Alternate Method

Given:

Ratio of profit distributed among three partners = 5 : 8 : 17

Difference between the smallest and largest shares = Rs. 78,106

5x

8x

17x

Difference (17x − 5x) = 12x = Rs. 78,106

Total Profit = 30x = ?

Calculations:

=> Let the shares of the three partners be 5x, 8x, and 17x respectively.

=> The smallest share = 5x

=> The largest share = 17x

=> According to the given condition, 17x − 5x = 78,106

=> 12x = 78,106

=> x = 78,106 ÷ 12

=> Total profit = 5x + 8x + 17x = 30x

=> Total profit = 30 × (78,106 ÷ 12)

=> Total profit = 78,106 × 2.5

=> Total profit = 1,95,265

Therefore The correct answer is Rs. 1,95,265.

Additional Information

Partnership Profit Ratio

In any business partnership, the ratio in which profit is shared among the partners is directly proportional to the product of their invested capital and the time period of investment (Profit prop. to Capital × Time).

Dividing a Sum in a Ratio

If a total amount is divided in the ratio a : b : c, the individual parts are calculated as (Part Ratio ÷ Sum of all Ratios) × Total Amount.

Q62. Answer: (c) 1.53 km

Shortcut Trick

Convert time directly to hours: 1.7 minutes = 1.7 ÷ 60 hours

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Distance = Speed × Time

Length of the bridge = 54 × (1.7 ÷ 60)

Length = 0.9 × 1.7 = 1.53 km

Therefore The correct answer is 1.53 km.

Alternate Method

Given:

Speed of the car = 54 km/hr

Time taken to cross the bridge = 1.7 minutes

Formula Used:

Distance = Speed × Time

Speed = 54 km/hr

Time = 1.7 minutes

Bridge Length = ?

Calculations:

=> First, let us convert the speed of the car into meters per second (m/s).

=> Speed in m/s = 54 × (5 ÷ 18)

=> Speed = 3 × 5 = 15 m/s

=> Next, convert the given time from minutes into seconds.

=> Time in seconds = 1.7 × 60

=> Time = 102 seconds

=> We know that Length of the bridge = Distance covered by the car

=> Distance = Speed × Time

=> Distance = 15 × 102

=> Distance = 1530 meters

=> Finally, convert the distance back into kilometers (since options are in km).

=> Distance in km = 1530 ÷ 1000 = 1.53 km

Therefore The correct answer is 1.53 km.

Additional Information

Unit Conversion

To quickly convert speed from km/hr to m/s, multiply the given value by 5/18. Conversely, to convert from m/s to km/hr, multiply by 18/5.

Relative Speed

When two objects move in the same direction, Relative Speed = |S1 − S2|. When moving in opposite directions, Relative Speed = S1 + S2.

Average Speed

Average Speed = Total Distance ÷ Total Time. If two equal distances are covered at different speeds x and y, the Average Speed is given by (2xy) ÷ (x + y).

Q63. Answer: (b) 250 cm2

Shortcut Trick

When two identical cubes of side 'a' are joined, the newly formed cuboid has exactly 10 visible faces.

This is because 2 out of the 12 total faces (6 faces per cube × 2) are completely hidden inside the joint.

=> Total Surface Area = $10a^2$

=> Total Surface Area = $10 \times (5)^2$

=> Total Surface Area = $10 \times 25 = 250$ cm^2

Therefore The correct answer is 250 cm^2.

Alternate Method

l = 10 cm

h = 5 cm

b = 5 cm

Given:

Edge of the individual cube (a) = 5 cm

When two identical cubes are joined end to end, the dimensions of the newly formed cuboid are:
=> Length (l) = 5 cm + 5 cm = 10 cm
=> Breadth (b) = 5 cm
=> Height (h) = 5 cm
Formula Used:
Total Surface Area of Cuboid = 2(lb + bh + hl)
Calculations:
=> TSA = 2 × (10 × 5 + 5 × 5 + 5 × 10)
=> TSA = 2 × (50 + 25 + 50)
=> TSA = 2 × 125
=> TSA = 250 cm^2
Therefore The correct answer is 250 cm^2.
Additional Information
Volume of a Cuboid
Volume is the total 3D space contained within the cuboid, calculated using the formula V = l × b × h.
Diagonal of a Cuboid
The length of the longest possible line segment that can fit inside the cuboid is calculated as Diagonal = $\sqrt{(l^2 + b^2 + h^2)}$.
Lateral Surface Area (LSA)
The Lateral Surface Area refers exclusively to the area of the four upright side walls of the cuboid, omitting the top and bottom faces. It is given by LSA = 2h(l + b).
Total Surface Area of a Cube
Since all 6 faces of a standard cube are identical squares of side length 'a', the total area formula simplifies to TSA = $6a^2$.

Q64. Answer: (a) 72 hours

Shortcut Trick
Time for P to fill tank = 24 × (3/2) = 36 hr. Q = 16 × (3/2) = 24 hr. Total capacity = LCM(36, 24) = 72 units.
Efficiency of P = +2, Q = +3. Water filled in 4 hr = 4 × (2 + 3) = 20 units.
R empties 20 units in 5 hr, so efficiency of R = −20 ÷ 5 = −4.
Combined efficiency of (P + Q + R) = 2 + 3 − 4 = +1.
Time taken to fill the tank together = 72 ÷ 1 = 72 hours.
Therefore The correct answer is 72 hours.
Alternate Method
Given:
Pipe P fills 2/3 of the tank in 24 hours.
Pipe Q fills 2/3 of the tank in 16 hours.
Both P and Q were kept open for 4 hours, and then pipe R emptied the filled water in 5 hours.
Formula Used:
Total Work = LCM of time taken
Efficiency = Total Work ÷ Time taken
Calculation:
=> Time taken by P to fill the full tank = 24 × (3/2) = 36 hours
=> Time taken by Q to fill the full tank = 16 × (3/2) = 24 hours

Pipe	Hours	Total Work	Efficiency
P	36	72	2
Q	24	3	

=> Water filled by P and Q in 4 hours = 4 × (2 + 3) = 20 units
=> Pipe R empties these 20 units in 5 hours.
=> Efficiency of pipe R = −20 ÷ 5 = −4 units/hr (Negative sign indicates emptying)
=> Combined efficiency of pipes P, Q, and R together = 2 + 3 − 4 = 1 unit/hr
=> Time required for P, Q, and R to fill the tank = Total Work ÷ Combined Efficiency
=> Time = 72 ÷ 1 = 72 hours

Therefore The correct answer is 72 hours.

Additional Information

Pipes & Cisterns Concept

Inlet pipes add water to the tank and are assigned a positive efficiency. Outlet pipes remove water and are assigned a negative efficiency.

LCM Method for Total Capacity

The total capacity of a tank is assumed to be the Lowest Common Multiple (LCM) of the times taken by individual pipes to fill or empty it.

Combined Work Rule

When multiple pipes operate together, their effective efficiency is the algebraic sum of their individual efficiencies. Total time = Total Capacity ÷ Combined Efficiency.

Q65. Answer: (c) 38

Shortcut Trick

The mean proportional of two numbers 'a' and 'b' is given directly by √(a × b).

=> Mean proportional = √(19 × 76)

=> Mean proportional = √(19 × 19 × 4)

=> Mean proportional = 19 × 2 = 38

Therefore The correct answer is 38.

Alternate Method

Given:

First number (a) = 19

Second number (b) = 76

Formula Used:

In a continuous proportion a : x :: x : b, the middle term 'x' is the mean proportional.

19

:

x

::

x

:

76

Continuous Proportion

Mean Proportional (x)

Calculations:

=> Let the mean proportional be x.

=> 19 : x :: x : 76

=> 19 ÷ x = x ÷ 76

=> x^2 = 19 × 76

=> x = √(19 × 76)

=> x = √(19 × 19 × 4)

=> x = 19 × 2

=> x = 38

Therefore The correct answer is 38.

Additional Information

Mean Proportional

For any two numbers 'a' and 'b', their mean proportional 'x' is calculated as x = √(a × b).

Third Proportional

For two numbers 'a' and 'b', the third proportional 'c' is found using the relation a : b :: b : c, which simplifies to c = b^2 ÷ a.

Fourth Proportional

For three numbers 'a', 'b', and 'c', the fourth proportional 'd' is determined by a : b :: c : d, resulting in d = (b × c) ÷ a.

Compound Ratio

The compound ratio of two individual ratios a : b and c : d is found by multiplying their corresponding terms, yielding (a × c) : (b × d).

Q66. Answer: (c) 1

Shortcut Trick

To find the smallest number to be added, use: Number to be added = Divisor − Remainder.

Divide the given number 16809 by 41.

16809 ÷ 41 gives a quotient of 409 and a remainder of 40.

Smallest number to be added = 41 − 40 = 1.

Therefore The correct answer is 1.

Alternate Method

Given:

The dividend is 16809.

The divisor is 41.

Formula Used:

Dividend = (Divisor × Quotient) + Remainder

Smallest number to be added = Divisor − Remainder

Calculations:

=> Perform the division of 16809 by 41.

=> 16809 = 41 × 400 + 409

=> 409 = 41 × 9 + 40

=> Therefore, 16809 = 41 × 409 + 40

=> The remainder obtained is 40.

=> For the number to be completely divisible by 41, the remainder must be exactly 0. Currently, it is short of the next multiple.

=> The required number to reach the next complete multiple = Divisor − Remainder.

=> Number to be added = 41 − 40 = 1.

=> Verification: 16809 + 1 = 16810. And 16810 ÷ 41 = 410.

Therefore The correct answer is 1.

Additional Information

Number to be Subtracted

To find the smallest number to be subtracted from a given number so that the result is perfectly divisible by a divisor, simply subtract the remainder obtained from the division.

Division Algorithm

The division algorithm states that: Dividend = (Divisor × Quotient) + Remainder. This is a fundamental mathematical rule used to verify division calculations.

Divisibility and Remainders

When a given number is not perfectly divisible by a divisor, adding the difference between the divisor and the remainder bridges the exact gap required to reach the next perfect multiple.

Q67. Answer: (c) 50% loss

Shortcut Trick

Given, 16 × SP = 8 × CP

=> SP / CP = 8 / 16 = 1 / 2

Here, CP = 2 units and SP = 1 unit. Since CP > SP, there is a loss.

Loss % = [(CP − SP) / CP] × 100

=> Loss % = (1 / 2) × 100 = 50%

Therefore The correct answer is 50% loss.

Alternate Method

Given:

Selling price of 16 books = Cost price of 8 books

Formula Used:

Loss = Cost Price (CP) − Selling Price (SP)

Loss % = (Loss ÷ CP) × 100

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Cost Price (2 units)
SP (1 unit)
Loss (1 unit)
Loss = 50%
Calculations:
=> Let the cost price of 1 book be Rs. 1.
=> Then, Cost Price (CP) of 16 books = Rs. 16.
=> According to the question, Selling Price (SP) of 16 books = Cost Price of 8 books = Rs. 8.
=> Since CP > SP, there is a loss in the transaction.
=> Loss = Rs. 16 − Rs. 8 = Rs. 8
=> Loss % = (8 ÷ 16) × 100
=> Loss % = (1 ÷ 2) × 100 = 50%
Therefore The correct answer is 50% loss.
Additional Information
Profit and Loss Percentage
Profit % = (Profit ÷ CP) × 100 | Loss % = (Loss ÷ CP) × 100. Both are always calculated on the Cost Price (CP) unless specified otherwise.
Marked Price and Discount
Discount is always calculated on the Marked Price (MP). Final Selling Price is calculated as SP = MP − Discount.
Dishonest Dealer Concept
If a dealer claims to sell at CP but uses a false weight, Profit % = [Error ÷ (True Value − Error)] × 100.

Q68. Answer: (c) 88

Shortcut Trick
Effective interest rate = Rate × Time
=> Effective rate = 4% × 5.5 = 22%
=> Simple Interest = 22% of Principal
=> SI = 22% of 400 = 88
Therefore The correct answer is Rs. 88.
Alternate Method
Given:
Principal (P) = Rs. 400
Rate (R) = 4% per annum
Time (T) = 5.5 years
Year 0
Year 5.5
P = Rs. 400
SI = ?
Rate = 4% p.a.
Time = 5.5 Years
• Total Simple Interest
Simple Interest Timeline
Formula Used:
Simple Interest (SI) = (P × R × T) ÷ 100
Calculation:
=> SI = (400 × 4 × 5.5) ÷ 100
=> SI = 4 × 4 × 5.5
=> SI = 16 × 5.5
=> SI = 88
Therefore The correct answer is Rs. 88.
Additional Information
Amount in Simple Interest

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The total amount paid or received is the sum of the principal and the simple interest. Formula: A = P + SI = P[1 + (RT ÷ 100)]

Compound Interest (CI)

Interest calculated on the initial principal and also on the accumulated interest of previous periods. Formula: A = P(1 + R ÷ 100)^T

Difference Between SI and CI (for 2 years)

The difference between compound interest and simple interest for exactly 2 years on the same principal is calculated as: D = P(R ÷ 100)²

Q69. Answer: (d) 28%

Shortcut Trick

Using the successive discount formula: D = x + y − (x × y) / 100

Here, the successive discounts are x = 20% and y = 10%.

Equivalent single discount = 20 + 10 − (20 × 10) / 100

Equivalent single discount = 30 − 2 = 28%

Therefore The correct answer is 28%.

Alternate Method

Given:

First discount = 20%

Second discount = 10%

Formula Used:

Selling Price (SP) = Marked Price (MP) × (100 − Discount%) / 100

Equivalent Discount % = [(MP − Final SP) / MP] × 100

MP = 100

SP1 = 80

SP2 = 72

−20%

−10%

Equivalent Discount = 28%

Calculations:

=> Let the Marked Price (MP) of the article be 100.

=> Price after 1st discount of 20% = 100 − (20 / 100 × 100) = 80

=> Price after 2nd discount of 10% = 80 − (10 / 100 × 80) = 80 − 8 = 72

=> Final Selling Price (SP) = 72

=> Total Discount offered = MP − Final SP = 100 − 72 = 28

=> Single Equivalent Discount % = (28 / 100) × 100 = 28%

Therefore The correct answer is 28%.

Additional Information

Successive Discount Formula

For two successive discounts of a% and b%, the equivalent single discount is directly given by the formula: (a + b − ab/100)%.

Marked Price vs Selling Price

A discount is always calculated on the Marked Price (or Tag Price). The final transaction value after applying discounts is the Selling Price.

Ratio Method for Discounts

Alternatively, discounts can be solved by converting percentages to fractions. Multiply the initial Marked Price ratios and the final Selling Price ratios to find the overall net change.

Three Successive Discounts

For three discounts a%, b%, and c%, first find the equivalent discount of a% and b% (let it be x%). Then apply the same formula between x% and c%.

Q70. Answer: (b) 727/35 days

Shortcut Trick

Total work = LCM(17, 16, 4) = 272 units.

Efficiency of A = 272 ÷ 17 = 16 units/day.

Efficiency of B = 272 ÷ 16 = 17 units/day.

Efficiency of A, B, and C together = 272 ÷ 4 = 68 units/day.

Efficiency of C = 68 − (16 + 17) = 35 units/day.

Therefore The correct answer is 7 ^(27)⁄35 days.

Alternate Method

Given:

Time taken by A = 17 days.

Time taken by B = 16 days.

Time taken by A, B, and C together = 4 days.

Method Used:

We use the LCM method to find the total work and the efficiency of each person.

Total Work = LCM of days taken by given persons or groups.

Efficiency = Total Work ÷ Number of Days.

Person	Days	Total Work	Efficiency
A	17	272	16
B	16	17	
A + B + C	4	68	

Calculations:

=> Efficiency of C = Combined Efficiency of (A + B + C) − (Efficiency of A + Efficiency of B)

=> Efficiency of C = 68 − (16 + 17)

=> Efficiency of C = 68 − 33 = 35 units/day

=> Time taken by C alone = Total Work ÷ Efficiency of C

=> Time taken by C alone = 272 ÷ 35

=> Time taken by C alone = 7 ^(27)⁄35 days

Therefore The correct answer is 7 ^(27)⁄35 days.

Additional Information

Pipes and Cisterns

Concepts are similar to Time and Work. Fill pipes have positive efficiency (adding work), and empty pipes have negative efficiency (removing work).

Work and Wages

Total wages are distributed in direct proportion to the actual amount of work done by each individual. If they work for an equal number of days, wages are distributed in the ratio of their efficiencies.

Alternate Day Work

If persons work on alternate days, you group the work into cycles (e.g., A works on Day 1, B works on Day 2 → 1 cycle = 2 days). Find the combined work done in one cycle and scale it up to reach close to the total work.

Q71. Answer: (a) 125 m

• Raghunandan walks 325 m towards the west to reach a cloth showroom.

• Then he turns to the right and walks 220 m straight to reach the fitness centre.

• Again, he turns to the right and walks for 200 m straight.

• Then, he turns to the right again and walks for 220 m.

The final Diagram,

Hence, the correct answer is "Option 1"

Q72. Answer: (c) 39

Given: 28 + 125 × 5 − 12 ÷ 3 = ?

if ‘+’ and ‘−’ are interchanged and ‘×’ and ‘÷’ are interchanged

28 - 125 ÷ 5 + 12 × 3 = ?

28 - 25 + 12 × 3 = ?

28 - 25 + 36 = ?

39.

Hence, the correct answer is "Option 3"

Q73. Answer: (d) 46, 71

The logic follows,

(First Number + 25 = Second Number).

Similarly,

Hence, the correct answer is "Option 4"

Q74. Answer: (d) TAH 18

The logic followed here is:

Hence, the correct answer is "Option 4"

Q75. Answer: (d) LOI

The logic followed here is:

Hence, the correct answer is "Option 4 "

Q76. Answer: (d) 178

The logic follows,

53 70 91 116 145 ?

Hence, the correct answer is "Option 4"

Q77. Answer: (d) EI-HK

The logic followed here is:

Hence, the correct answer is "Option 4 "

Q78. Answer: (a) Three

Eight people, S, T, U, V, W, X, Y and Z, are sitting in a straight line.

• All are facing towards the north.

• S sits third from the extreme left end of the line.

• W is an immediate neighbour of V.

• Only U sits between S and W.

• Z is sitting at the extreme right end of the line.

• T is an immediate neighbour of both Y and S

The final arrangement is

Three people sit to the right of W

Hence, the correct answer is "Option 1"

Q79. Answer: (c) 962

The logic follows,

Hence, the correct answer is "Option 3"

Q80. Answer: (a) Only Conclusion II follows

The Venn diagram as per the given statements:

Conclusions:

(I): All hills are forests. - False (All forests are hills. Some hills are forest but All hills are forests is may be possible but nnot definte. Hence, it is false)

(II): Some deserts are hills. - True (Some hills are deserts. Some desserts are hills is true.)

Only Conclusion II follows.

Hence, the correct answer is "Option 1"

Q81. Answer: (a) Both conclusions (I) and (II) follow.

The Venn diagram as per the given statements:

Conclusions:

(I): Some dancers are ludo.- True (All ludo are dancer. Some Ludo is Dancer andSome dancers are ludo is True)

(II): All bottles are dancers. .- True (All Bottle are Ludo. All ludo are dancer.So, All bottles are dancers is True)

Both conclusions (I) and (II) follow.

Hence, the correct answer is "Option 1"

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Q82. Answer: (c) QOL -9

The logic followed here is:

Hence, the correct answer is "Option 3"

Q83. Answer: (c) 44

• Shekhar's rank from the top = 7th

• Shekhar's rank from the bottom = 38th

To find the total number of students, we use the relation:

Total students=(Rank from top)+(Rank from bottom)−1

Total students = 7 + 38 − 1

= 44.

Hence, the correct answer is "Option 3"

Q84. Answer: (c) Son's wife's father

Preparing the family tree diagram by using the following symbols:

As per the given information:

A is				
Symbol	•	•	×	÷
Means	Son	Sister	Wife	Father
of B				

Given: 'Q ÷ E – R x C + D'

R is wife of C and Q is father of R.

Hence, the correct answer is "Option 3"

Q85. Answer: (d) FCJB

The logic followed here is:

Similarly,

Hence, the correct answer is "Option C"

Q86. Answer: (a) JQN

The logic followed here is:

Hence, the correct answer is "Option 1"

Q87. Answer: (b) 6

Given the interchange rules:

• '+' and '−' are interchanged.

• '×' and '÷' are interchanged.

Given e×pression: 26 × 2 − 21 + 7 ÷ 4 = ?

After replacing the symbols with their meanings:

Perform operations according to BODMAS:

=> 26 ÷ 2 + 21 − 7× 4 = ?

=> 13 + 21 − 7× 4 = ?

=> 13 + 21 − 28 = ?

=> 34 - 28 = ?

= 6.

Hence, the correct answer is "Option 2"

Q88. Answer: (c) 907

The logic follows here,

Hence, the correct answer is "Option 3"

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Q89. Answer: (b) 2

‘MAZE’ is coded as ‘3527’

‘AIDS’ is coded as ‘2416’

The code of A is 2.

Hence, the correct answer is "Option 2 "

Q90. Answer: (c) YZMN

The logic is as follows

Similarly,

Hence, the correct answer is "Option 3"

Q91. Answer: (c) 10

According to the given condition the series becomes:

Sum of the digits that are second from the left and second from the right =

6+ 4 = 10.

Hence, the correct answer is "Option 3"

Q92. Answer: (b) Two

According to the given condition the series becomes:

2 is added in the third digit of each number,

Numbers thus formed will be odd numbers— 259, 753.

Hence, the correct answer is "Option 2"

Q93. Answer: (a) Three

Given series: (Left) 2 % / < 9 $ / % 6 * 4 5 8 # ? > 2 2 + 2 \ (Right)

According to the question, such symbols are there, each of which is immediately preceded by a number and also immediately followed by another symbol.

Required condition: Number - Symbol - another symbol.

(Left) 2 % / < 9 $ / % 6 * 4 5 8 # ? > 2 2 + 2 \ (Right)

Hence, the correct answer is "Option 1"

Q94. Answer: (c) 6

Given number: '95423671'

1 is subtracted from each even digit

sum of the digits that are second from the left and third from the right.

1 + 5 = 6.

Hence, the correct answer is "Option 3"

Q95. Answer: (b) 3

Given: Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order.

• Only four boxes are kept between C and F.

• Only A is kept above C.

• Only two boxes are kept between D and E.

• G is kept immediately above B.

• E is not kept immediately above G

• The Final Arrangemnt is

• | A |

C
D
G
B
E

F

• 3 boxes are kept above G.

Hence, the correct answer is "Option 2"

Q96. Answer: (d) 4 km towards east

Given:

• Harini starts from Point Y and drives 7 km towards the south.

• She then takes a left turn, drives 14 km.

• She then turns left and drives 7 km.

• She takes a final left turn, drives 18 km and stops at Point Z

The Final Diagram,

Hence, the correct answer is "Option 4"

Q97. Answer: (d) K

Seven boxes F, G, H, I, K, L, and O are kept one over the other but not necessarily in the same order.

• Only three boxes are kept below H.

• Only two boxes are kept between H and O.

• Only L is kept above G.

• F is kept at some place below I and at some place above K

The Final Diagram,

L
G
I
H
F
K
O

Hence, the correct answer is "Option 4"

Q98. Answer: (a) PNW : LQS

The logic followed here is:

Similarly,

Hence, the correct answer is "Option 1"

Q99. Answer: (a) S

L, M, N, O, Q, R and S are sitting around a circular table, facing the centre of the table.

• Only one person sits between Q and S when counted from the right of Q.

• Only one person sits between S and N. Only one person sits between Q and R.

• Only two people sit between L and N.

• Only one person sits between O and R.

The final arrangement is:

S sits third to the right of M.

Hence, the correct answer is "Option 1"

Q100. Answer: (a) 2

Given:

BEST' is coded as '3527'.

'EARN' is coded as '1246'.

So,

B E S T' - ' 3 5 2 7'.

‘E A R N’ - ‘1 2 4 6’.
The code for E is 2.
Hence, the correct answer is "Option 1"

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